40p

Printout No 9

Fortnightly October 13—October 26 1983

LOAD RUNNER

THE GALAXY'S FIRST COMPUTER COMIC

FREE POP SINGLE & PROGRAMS

THE MONSTROUS SPIDER ENSURES ITS PREY IS SECURE, BOUND TIGHTLY AND IMMOBILISED BY ITS AWFUL *POISON*...

LOAD RUNNER! WAKE UP!

UH...WHAT?

NARROWLY ESCAPING DEATH AFTER CRASH-LANDING THEIR PLANE, *LOAD RUNNER* AND *PETRA* FACE A NEW PERIL IN THIS BIZARRE COMPUTER-CONTROLLED *GAME WORLD*.

3 SPECTRUMS TO BE WON

THE TERROR OF MIND WARP

COMPUTER ROCK

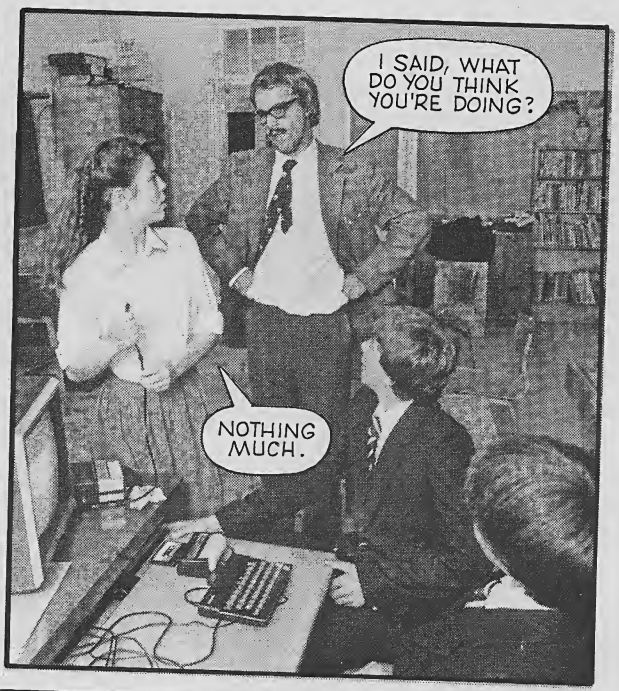
WHAT HAPPENED? ALL I REMEMBER IS THAT CRASH...HEY, I'M TIED UP!
ME TOO. WE'VE BEEN CAPTURED... BUT BY WHAT? I THINK WE'VE BEEN DRUGGED TOO... I FEEL AWFUL.
WAIT! THERE'S SOMETHING MOVING... OVER THERE. COME OUT, WHOEVER YOU ARE!
IN THE DARKNESS, EXPRESSIONLESS EYES SURVEY THEM...
WHO... WHAT ARE YOU?! WHY HAVE YOU TIED US UP?
OH DEAR ME, NO... IT WASN'T ME. HOLD ON, I'LL RELEASE YOU. YOU'LL NEED MY SERUM, TOO.
SO MOMENTS LATER...
I FEEL MUCH BETTER NOW. WHO DRUGGED US?
NO, NO... NOT 'WHO', WHAT. THE SPIDERS, IS WHAT. OOH, I HATE THOSE SPIDERS.
LOOK AT THE SIZE OF THAT THING!
HOW COULD YOU KILL IT?
SERUM
SERUM VALUE REMAINING...ZERO
INSTIGATE ATTACK PROCEDURE.

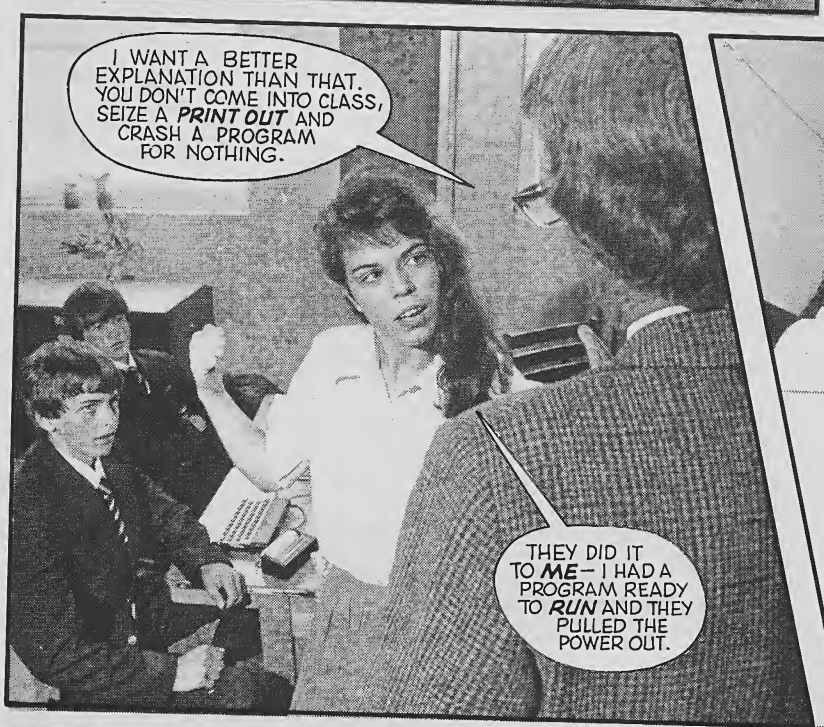
WHAT ON EARTH'S IT GOING TO DO?
OH, I TOOK THE PRECAUTION OF LAYING A TRAP...
...EXPECTING IT TO RETURN...
...FOR ITS, UM, PREY.
SSSSS
WELL, THAT WAS EFFECTIVE. ARE THERE MORE?
INDEED YES...AND CLOSE, TOO. WE MUST BE QUICK.
WE'LL GIVE YOU A...ER, HAND TO PREPARE.
WHAT A STRANGE CREATURE, ALMOST TIMID... THINGS ARE GETTING REALLY WEIRD.
LOOK OUT!
AARGH!
OH, BE CAREFUL! I'VE NO SERUM LEFT!
FIRE!
MAYBE NOT, BUT I'VE GOT SOMETHING ELSE HERE...
IT'S WORKING! THE SPIDER'S BACKING OFF!
UH, PETRA...I'D LIKE TO SAY THANK YOU AGAIN, BUT...

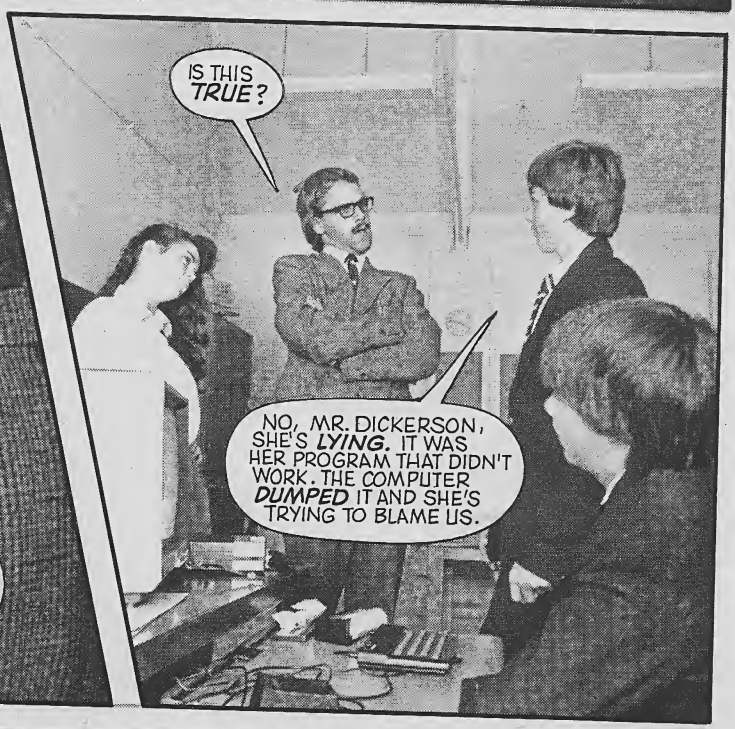
... I THINK IT'S TIME WE WENT.
SERUM 0
ERROR MESSAGE. GAME BROKEN.
STAND BY FOR NEW INSTRUCTIONS.
C'MON! LET'S GET OUT OF HERE!
WELL, I GUESS THAT TAKES CARE OF THAT.
SCRIPT
STEVE CRADDOCK
ARTWORK
PETER DENNIS
LETTERS
MICK HOLLINGWORTH
HIGH ABOVE THEM, THEY ARE BEING WATCHED.
NEXT PRINTOUT: THE HUNTERS AND THE HUNTED

SCHOOL FOR SOFTWARE

REBEL PUPIL **BEV JEAVONS** HAS HAD HER PROGRAM FOR THE SCHOOL **SOFTWARE COMPETITION** WIPED OUT BY THE FORM **COMPUTER CREEPS**, BUT SHE HAS CHOSEN THE WRONG MOMENT FOR REVENGE . . .







SCRIPT
FRANK HOPKINSON

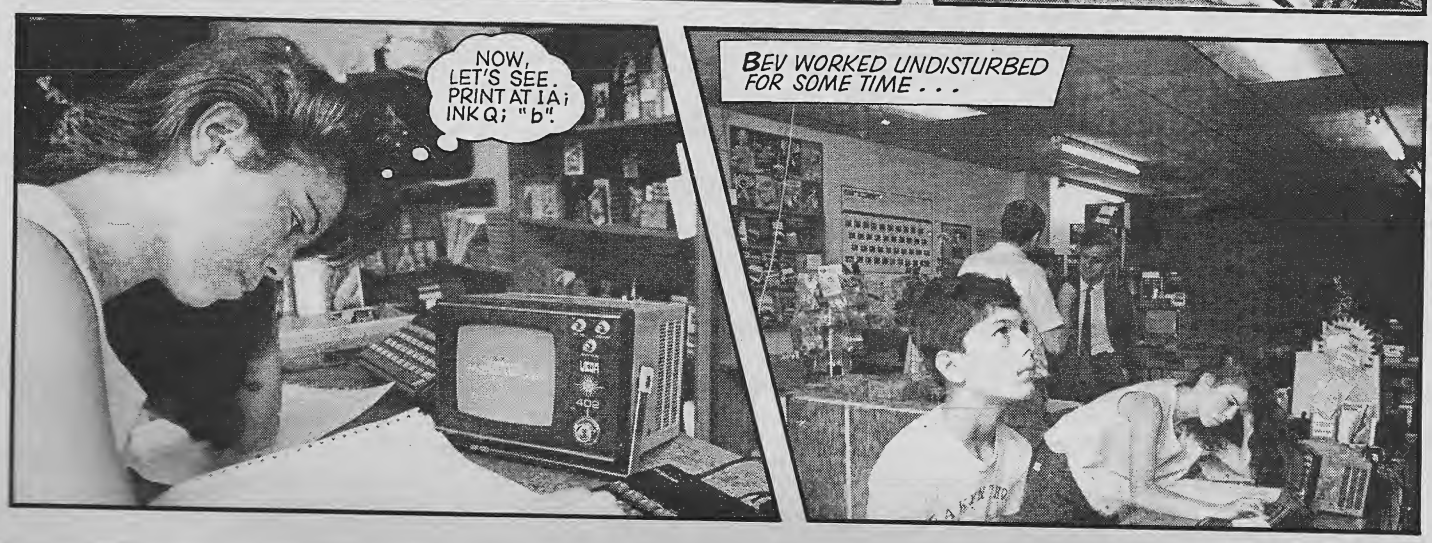
PHOTOS
HENRY ARDEN

LETTERS
JACK POTTER

YOU CAN'T DO THAT!
I CAN. IT'S MY DEPARTMENT.
YEAH, AND WHAT A NAFF DEPARTMENT IT IS. GET STUFFED, DICKERSON!
SHE WON'T STAND A CHANCE OF WINNING, NOW.
SHE DIDN'T, ANYWAY, NOT WITH WHAT WE'VE GOT LINED UP.
THE MICRONET ADAPTOR SHOULD BE ARRIVING NEXT WEEK
WE'VE GOT THIS COMPETITION SEWN UP.
AS LONG AS WE CAN FIND THE RIGHT PROGRAM.
WE'LL HAVE ENOUGH CHOICE.
AT HOME IN HER BEDROOM . . .
I COULDN'T HAVE MESSED THINGS UP BETTER IF I'D TRIED.
WAIT A MINUTE, THAT MICRO STORE IN TOWN HAS GOT DEMONSTRATION MODELS.

I CAN USE ONE OF THOSE! STUFF THE SCHOOL COMPUTER.
THE NEXT DAY...
AFTER ALL, I'M A POTENTIAL CUSTOMER, I'D BUY A MICRO IF I HAD THE MONEY. IT'S JUST THAT I DON'T HAVE THE MONEY.
AT THE STORE BEV LOOKS AROUND FOR THE RIGHT HARDWARE...

CAN I HELP, MADAME?
I'D LIKE TO SEE A SPECTRUM. IN USE, OF COURSE.
ARE YOU SURE THIS IS WHAT YOU'RE LOOKING FOR? IT'S QUITE EXPENSIVE.
I'LL JUST TRY IT OUT, IF YOU DON'T MIND.


NOW, LET'S SEE. PRINT AT 1A; INK Q; "b".
BEV WORKED UNDISTURBED FOR SOME TIME...

SCHOOL FOR SOFTWARE

Wordplotter 9

THE WORDSQUARE below contains the names of four computers; their names begin with D, N, S and P. Look for the initial letter and try to trace the names, going up or down, forwards, backwards or diagonally as necessary.

B	A	N	I	A	L	A	L
F	I	R	R	S	R	T	M
P	I	D	C	A	K	B	B
M	E	L	T	G	R	I	W
D	O	O	T	O	C	E	I
L	D	R	E	K	N	H	N
M	E	S	P	E	C	E	M
C	E	P	D	L	T	R	U

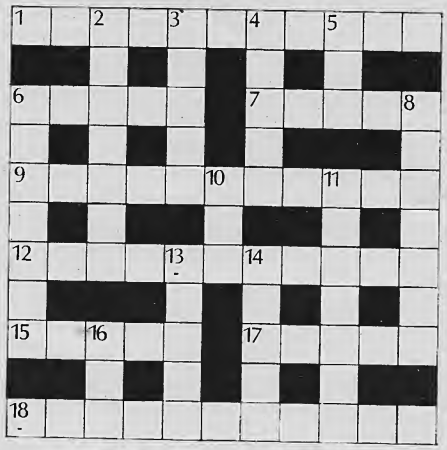
Below are five buzzword phrases which have been mixed-up. Can you match the words in column A to the correct words in column B?

A	B
LOAD	RESOLUTION
BRAIN	CODE
DISC	STORM
MACHINE	RUNNER
HIGH	DRIVE

ANSWERS to the puzzles in last printout:

The Datasnake secret word is ANALOGUE.

The range of numbers, 1 to 100, must be halved repeatedly. If the original number is 65 the computer would first guess 50. It would them divide the range 50–100 by two which leaves 75. As the original is now lower the computer finds the middle of the range 50–75. If the result of the division by two is not an integer the computer rounds it down, i.e. 50.75 becomes 50.



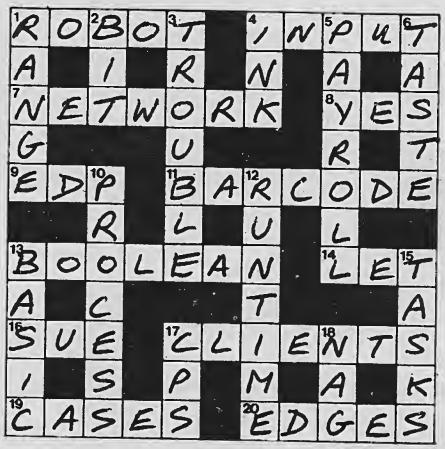
Across

1. The 14 of a little computer? Sinclair's new offspring! (11)
6. Little shirts for fairly large computers (5)
7. Happen to be 200 in what belongs to us (5)
9. Like to start? (4,2,5)
12. Shining bright like old manuscript or new pixel (11)
15. RETURN to some (5)
17. One way most may become all (5)
18. What the processor does to a memory location (9,2)

Down

2. Use of a computer in charge of other equipment (7)
3. Beginning of two TRS-80 keywords (5)
4. Equilateral parallelogram (5)
5. The twentieth micro? (3)
6. Man-made object talked to in code by experts (7)
8. Dry runs upset when the engine finishes its lubricant (7)
10. Japanese sash found in a micro belt (3)
11. Collects together data (7)
13. Join gently together, two programs for instance (5)
14. Requires requirements (5)
16. Young Edward is an old tearaway (3)

WORD PLOTTER 8 SOLUTION



Loading Instructions
for the computer programs on your free single.

The computer programs on this disc are for the following personal computers:—

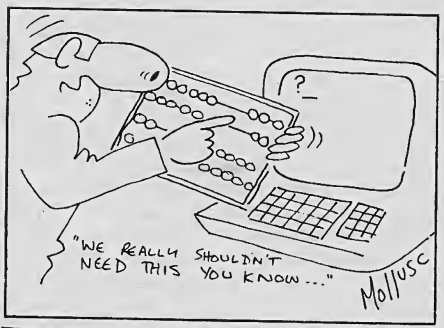
Track 1 BBC Model B
Track 2 Spectrum 48K
Track 3 Dragon 32K

Each program can be loaded directly into the appropriate computer by connecting the headphone output of your amplifier to the cassette input on the computer. This might mean that you have to make or buy an adaptor lead to fit both sockets.

Another method is to record the program onto a cassette and load this in the usual way. It is a good idea with both methods to feed a mono signal only into the computer, and this may be achieved by turning the balance control on your amplifier to one side. As always with loading programs the correct volume level must be used.

As the record grooves will eventually wear out, possibly causing loading problems, why not SAVE the program on cassette for future use?

Now sit back, listen and watch!



Programming?

I THINK Load Runner is fantastic; the stories are excellent. Will you do any features on programming? I would like to learn how to write my own programs. Can you do anything to help?

Russell Brown, Polmont, Falkirk

At the moment I have no plans for my operators to run any fact-routines on programming but your request has been filed in the databanks for future consideration. What do other readers think?

I will pay £3 for each letter or joke printed.

Write to: The Controller,
Load Runner,
196-200 Balls Pond Road,
London N1 4AQ

20 Mainframe LPs awarded to Load Runner Decoders

IN THIS PRINTOUT there are prizes galore to be claimed by Decoders. Mainframe, the computer rock band which recorded the special Load Runner *free single, have donated 10 copies of the recently-released album* Tenants of the Lattice Work *to be awarded to the lucky Decoders whose membership numbers are listed in the coded printout below. As a bonus, each LP will be accompanied by an unreleased album entitled* End of an Era, *composed by Murray Munro — a white label collectors' item! To discover whether you are one of the members listed, decode the message using your cipher book. The message also contains an easy question. If your number is included, claim your prize by writing your name, address and membership number on a postcard, together with the answer to the question, and post it to me at my installation base to arrive not later than October 28. The prizewinners will have their photographs displayed on this page in future printouts. If your number is not listed, you can still obtain* Tenants of the Lattice Work *at the reduced rate quoted at the bottom of this page.*

QRU FSMDY WAHHULN CLU: **(Keyword No. 1)**

IHU ZULI QWI TAVU;
IHU QWI NUVUH TAVU;
IHU IHU ZULI UAERQ;
IHU QWI IHU TISL;

IHU ZULI QRLUU ZULI;
IHU QWI ZULI NAX;
IHU IHU NAX QWI;
IHU ZULI HAHU UAERQ;
IHU IHU UAERQ QRLUU;
IHU QWI TAVU NUVUH;

WRAMR QUCG PIUN CHPY LIYP JFCY TIL?

Join the Club

THE LOAD RUNNER DECODERS is a rapidly growing fan club for readers of the first computer comic in the galaxy. A new member will receive a personalised security pass with his or her photograph mounted upon it, together with a membership number. This Security Pass will give the bearer a reduced admission charge to exhibitions and computer fairs announced from time to time in the Decoders page of Load Runner.

Each member will also receive the Decoders Cipher Book which provides the key to the coded messages that appear in each printout. Exciting prizes are awarded to successful Decoders whose membership numbers appear in those messages.

The cost of membership is £3. If, however, you cut out the word Decoders from the top of this page and from one other printout of Load Runner, *you can join the club at the special reduced rate of £1. Simply fill in the application form below and send it together with your membership fee and TWO passport-size photographs to: The Controller, Load Runner Decoders, ECC Publications, 196-200 Balls Pond Road, London N1 4AQ. Please make cheques or postal orders payable to ECC Publications Ltd.*

List below the story-programs and fact-routines that you like best in Load Runner.

1 .....

2 .....

3 .....

What do you dislike most in Load Runner?

.....

Do you have a computer? YES/NO

Name ....Age .....

Address .....

.....

Star Letter

ARE YOU a Decoder with a difference? Do you have an interesting hobby or an unusual use for your computer? Has something out-of-the-ordinary ever happened to you? Write and tell me about it, including a photograph if possible. £5 will be paid for each Star Letter published.

Special discount on Mainframe album

TENANTS OF THE LATTICE WORK is a computer rock album which tells in words and music the adventures of Oscar, an ordinary office worker suddenly plunged into the extraordinary computerised future. His story also forms part of The Quest — a complicated puzzle that nevertheless can be solved by anyone with a good school standard of general knowledge. There are big prizes to be won.

Decoders can purchase the LP at the exclusive *Load Runner* discount of £4.25, which includes postage and packing. The normal retail price is £4.99. Send a cheque or a postal order, together with your name, address and membership number, to: Mainframe Decoders Offer, Load Runner, ECC Publications, 196–200 Balls Pond Road, London N1 4AQ. This offer is open to Decoders only.

3 48K SPECTRUMS PLUS Scrabble cassettes

THE 48K SINCLAIR SPECTRUM is one of the most popular computers in the world. It has the following specifications:
★ Full colour, high-resolution graphics ★ Full-size keyboard ★ Upper and lower case characters ★ High speed LOAD and SAVE ★ Built-in Sinclair Basic ★ Sound capability ★ 48K RAM.

The Spectrum has an enormous range of available software and is easily expandable, compatible with the ZX Printer and the new ZX Microdrives, which provide high-speed access to massive storage.

There are three 48K Spectrums to be awarded to prizewinners, and each comes with Computer Scrabble, the on-screen version of the famous board game, containing a huge vocabulary of over 11,000 words and four skill levels, the highest of which is virtually unbeatable.

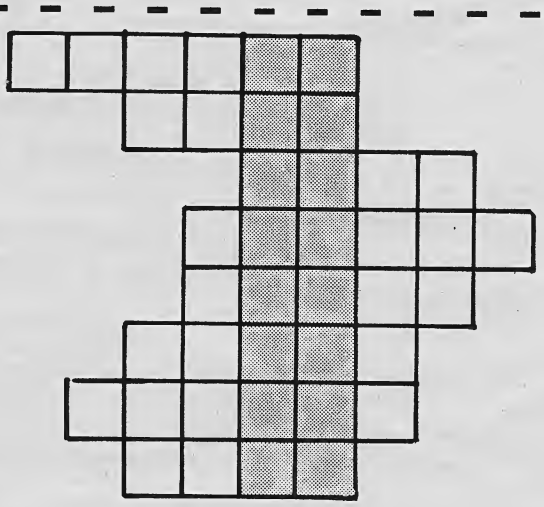
HOW TO ENTER

BELOW are listed eight different words. Each of these words must be placed horizontally inside the grid on the entry form. When the words have been placed correctly they will spell out two eight-letter words vertically in the shaded columns. Both of these words are associated with computing.

When you have completed your solution, complete the details on the entry form and post it to: Spectrum Competition, Load Runner, ECC Publications, 196–200 Balls Pond Road, London N1 4AQ, to arrive not later than October 28. The winners will be decided on the basis of the first three correct solutions opened. The controller's decision is final and employees of Sinclair Research and ECC Publications are ineligible.

The eight words are:

BARIUM
ALTER
CHIP
START
REMISS
NEXT
FIRM
ACCESS



Name .....

Address .....

..... Age .....

Play in the big league — with only the best, newest programs!

We've searched for brilliant new program sources throughout the U.K. and North America to find an exciting collection of new games — and business programs — many of which cannot be bought by mail order from any other source!

Every month, we'll be adding to our catalogue to bring you the best of new games, new business, educational and household software. And the good news is — **we're specialising in programs for your Sinclair!**

With our special new deal — you just CAN'T GO WRONG.

* A free offer every month [this time it's a free blank C20 cassette with every two games ordered]
* A money-back guarantee if you're not entirely satisfied with your purchase — that's how confident we are about the quality and value!

All you have to do is look at our first HOT selection, then order quickly to be among the first to own these games of skill, intelligence and excitement [fast delivery is another of our specialities — so you could be using these new programs SOON].

FREE BLANK C20 COMPUTER CASSETTE WITH EVERY TWO CASSETTES YOU ORDER!

Remember there's no limit to the number of free cassettes you receive if your order justifies them — so why not get together with friends or user group members and share the freebies?

GUARANTEE

Order with complete confidence. If you are not entirely satisfied with the quality of your purchase return it to us within 7 days and we will provide a replacement.

GREAT VALUE! TREMENDOUS SELECTION! PLUS A FREE OFFER EVERY TIME!

Fill in the order form right away — we're guaranteeing fast delivery, quality and satisfaction [after all, we want you to come back for more!]

The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP

Here's a whole NEW selection of the latest games, the best-value software for your ZX-81 or Spectrum.

ZX81 Software

1-01 Stock Market — £3.95
Buy and sell your way to millions! 16K RAM

1-02 Football League — £3.95
First division fun for the soccer enthusiast. 16K RAM

1-03 Test Match — £3.95
Match your wits alongside the superstars. 16K RAM

1-12 Avenger — £4.95
Avoid missiles and bombs to become the ruler. 16K RAM

1-13 Protector — £4.95
Defend your own ship from oncoming attackers. 16K RAM

1-31 Comp-U-Share — £9.95
Investment management program for unit trusts, shares and loan stocks. Complete documentation included. 16K RAM

1-32 Comp-U-Tax — £9.95
Accurate personal income tax calculator for 82/83 tax year. Full documentation included. 16K RAM

Spectrum Software

2-12 Avenger — £4.95
[See 1-12 under ZX81]. 48K RAM

2-13 Sentinel — £4.95
Guard your mother ship against alien attacks. 48K RAM

2-14 Meteor Storm — £4.95
Spectrum version of the ever-popular arcade game. 16K or 48K RAM

2-15 Star Trek — £4.95
Popular space program brought to life by excellent graphics. 48K RAM

2-21 Frogger — £5.95
Manoeuvre the frog across the road avoiding heavy traffic. 48K RAM

2-22 Crazy Balloons — £5.95
Guide the balloons round the maze without bursting. 48K RAM

2-23 Arcadia — £5.95
The expert's version of the popular 'Invaders' game. 16K or 48K RAM

2-24 Golf — £5.95
The finest of golf handicap games. 48K RAM

2-25 Test Match — £5.95
More exciting than the real thing! 48K RAM

2-26 Derby Day — £5.95
This favourite has to be a winner. 48K RAM

2-27 Rescue — £5.95
Rescue the Princess from marauding patrols. 48K RAM

2-29 Jackpot — £5.95
The harmless way to take on the one-armed bandit. 48K RAM

2-41 Comp-U-Share — £9.95
See 1-31 under ZX81. 48K RAM

2-42 Comp-U-Tax — £9.95
See 1-32 under ZX81. 48K RAM

To: The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP

I wish to order the following programs. I understand that:

* I will receive a FREE blank cassette with every 2 programs ordered
* I can return products within seven days if not entirely satisfied and receive a replacement.

Ref No	Qty	Title	Price

Postage, packing and handling: add 45p for the first cassette, and 25p for each additional cassette. Non-UK orders add extra 50%

Total

I enclose a cheque/postal order for _____

Name _____

Address _____

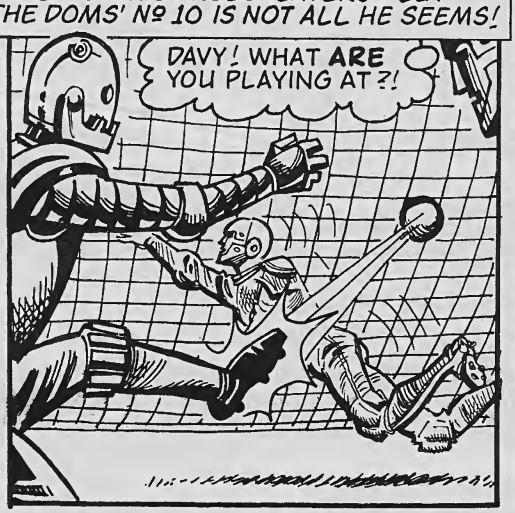
_____

(Allow 28 days MAXIMUM FOR DELIVERY)

Andy Royd-the DOMINATORS' Rogue star!

A GOAL DOWN AGAINST **DAVY'S DOMINATORS, KIT CURSOR** HAS SECRETLY PLACED A MYSTERIOUS **BLACK BOX** UNDER THE COMPUTER CONTROLLING THE DOMS' **ROBOPLAYERS!**

IN THE 1990S **ALL** SPORT HAS BEEN TAKEN OVER BY ROBOPLAYERS - BUT THE DOMS' Nº 10 IS NOT ALL HE SEEMS!



MAIMED IN A CHILDHOOD ACCIDENT, HIS LIMBS RE-BUILT WITH EXPERIMENTAL BIO-MECHANICAL SURGERY...

ONE MINUTE TO GO AND **21** ROBOS TO **BEAT!**

...**ANDY ROYD** SECRETLY USES HIS **NATURAL** TALENT AND **ARTIFICIAL** STRENGTH TO TAKE ON THE **IRONMEN** OF FOOTBALL.

GOAL!

DAVY MANAGED TO GET **ONE** OF THEM BACK ON-LINE AT LEAST!

I REALLY DUNNO WHAT **HAPPENED** THERE, KIT, BUT-

NEITHER DO I, DAVY. STILL, I GOTTA GO-SEE YOU!

I CERTAINLY DON'T KNOW HOW YOU PULLED THAT **GOAL** BACK-MARSHALL IS **NOT** GOING TO BE AMUSED!

IT'S GOIN' TO TAKE **AGES** TO SALVAGE THIS LOT! WHERE'S ANDY, BERT? HE'S LIKE THE SCARLET PUMPERNICKLE WHEN THERE'S WORK TO BE DONE!

DUNNO, ALF. I SAW HIM ROARING OFF ON THAT TWO-WHEELED **DEATH-TRAP** OF HIS!

I'VE GOT TO FIND OUT WHERE THAT DISC-BAG **CURSOR**'S GOING.

ISOBEL D'ARTH CHECKS OUT THE SOFTWARE...

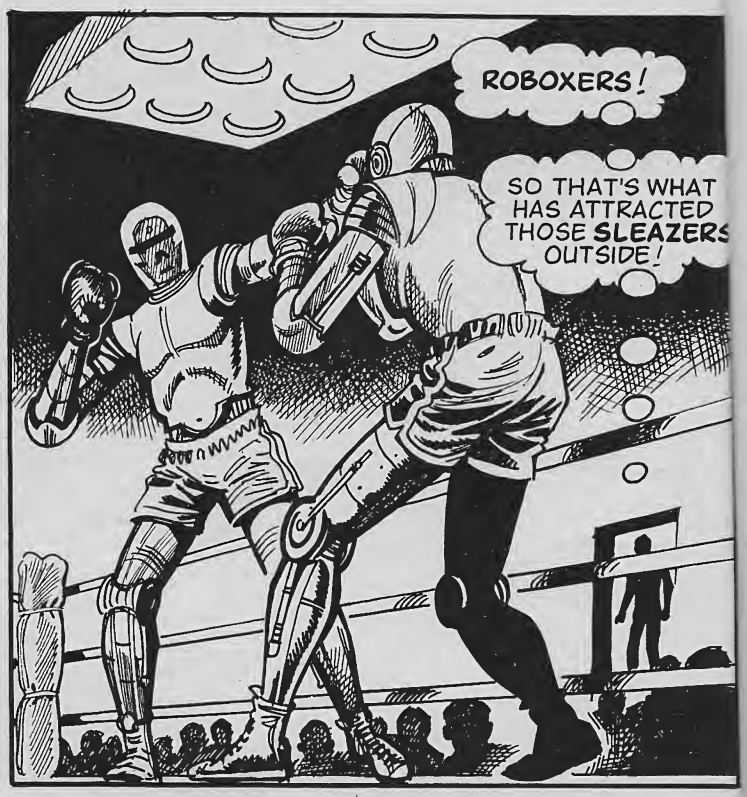
THE PROGRAM'S INTACT- BUT THE COMPUTER SEEMS TO HAVE NO **MEMORY** OF THAT GAME.

I DON'T **BLAME** IT!

THE OLD **SPORTS CENTRE** USED TO BE DOWN HERE.

SCRIPT- **C.WINCH**
ART- **J. STOKES**
LETTERS- **CRADDOCK**

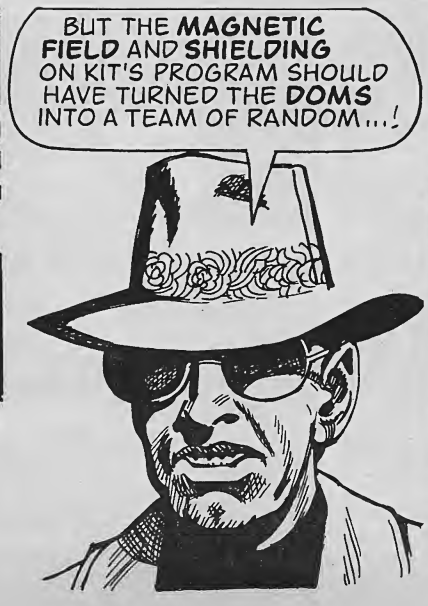
INSIDE...
THIS LOT ARE MAKING ME ITCH.

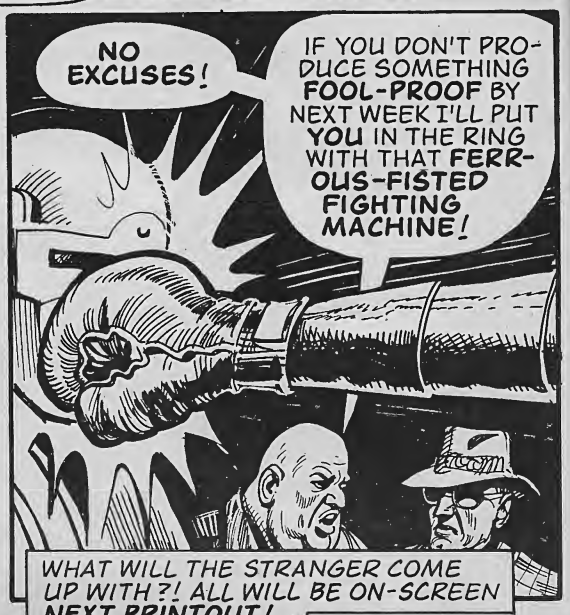

ROBOXERS!
SO THAT'S WHAT HAS ATTRACTED THOSE SLEAZERS OUTSIDE!

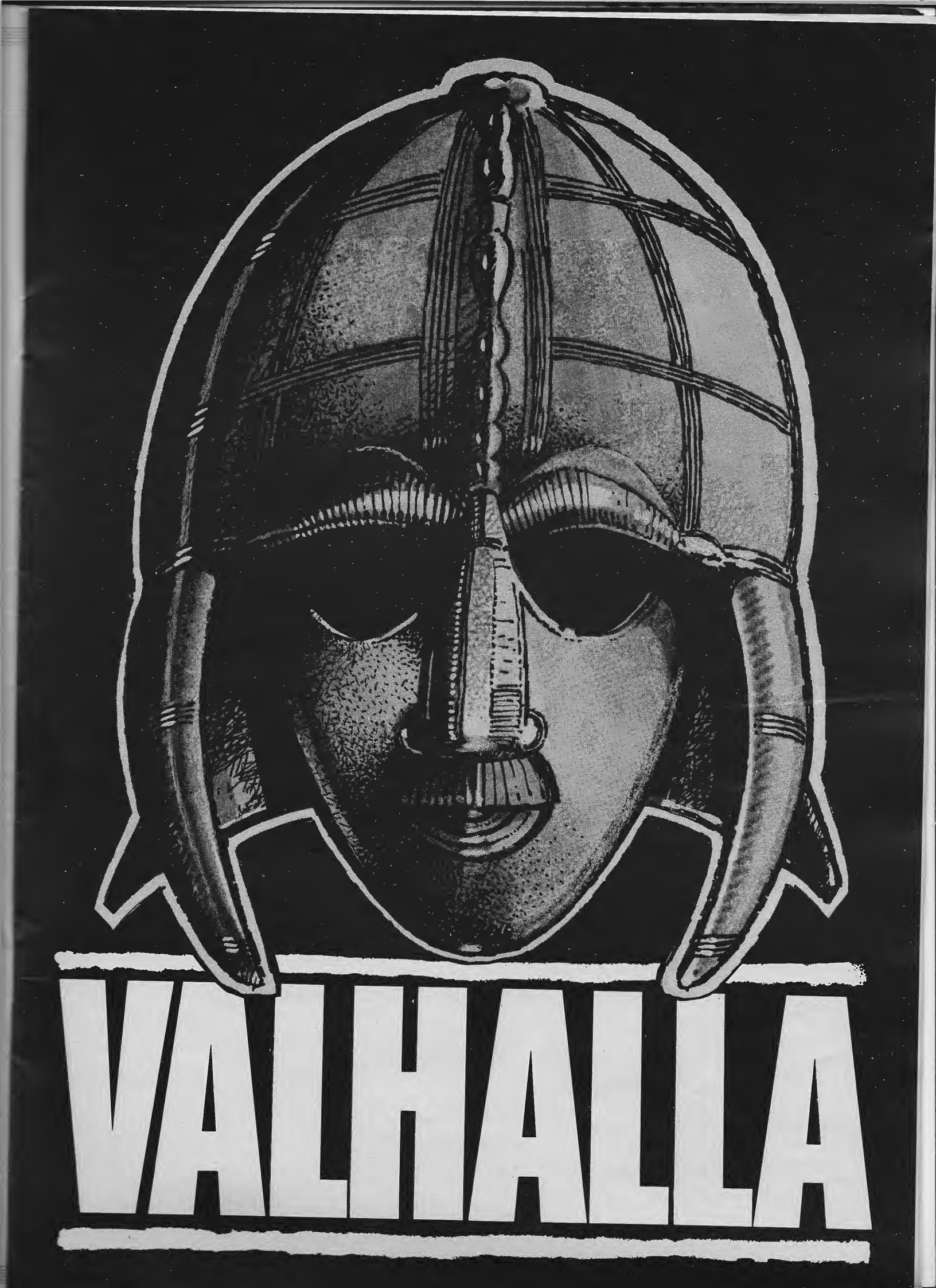
THERE'S MARSHALL. HELL! I'LL NEVER GET CLOSE ENOUGH TO HEAR THEM!

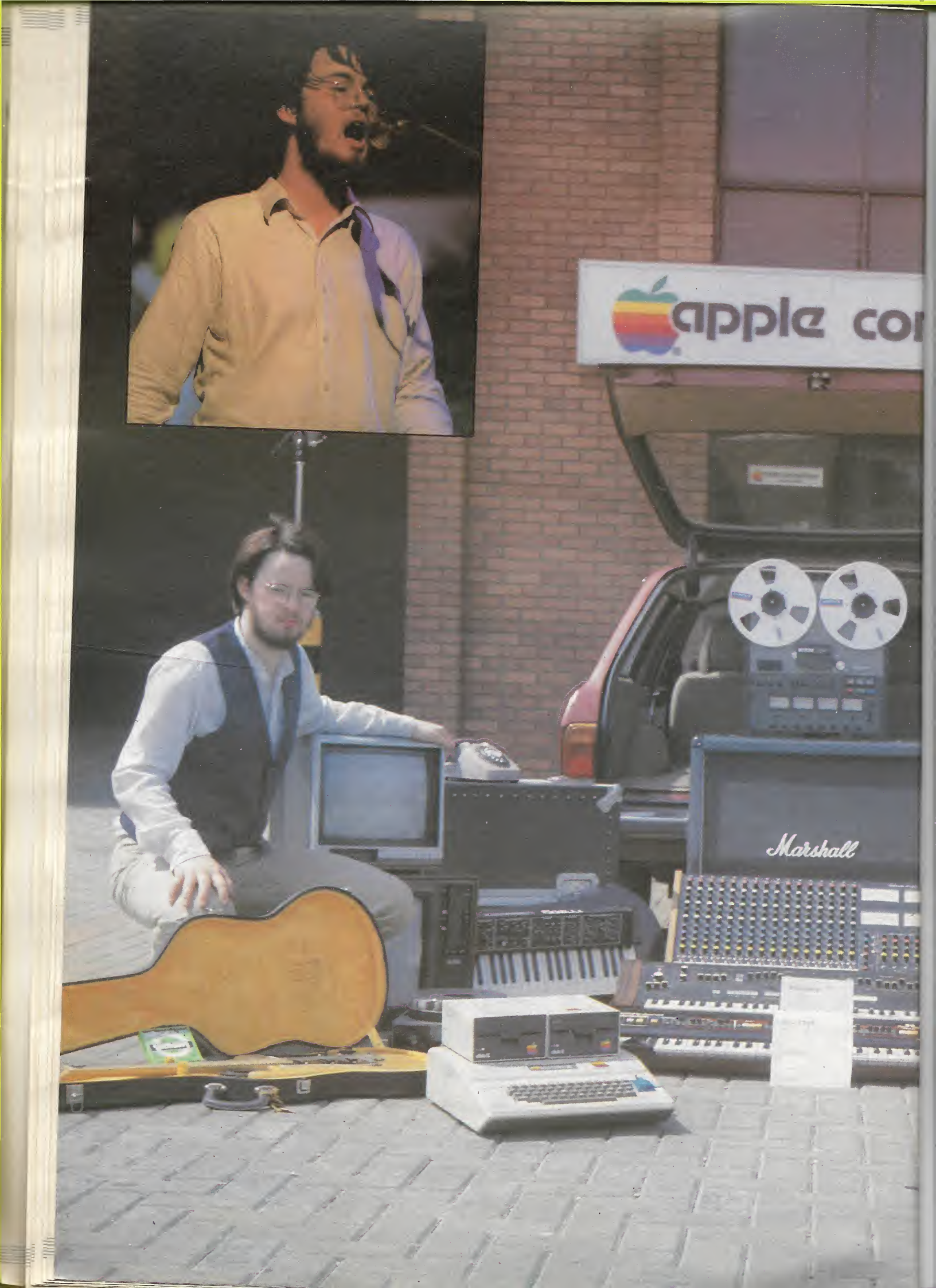
CURSOR! HOW DID IT GO?
YOU'VE BEEN CONNED, MR MARSHALL - THE DOMS' STILL MANAGED A DRAW!

YOU INCOMPETENT MOTHERBOARD! YOU'LL PAY FOR THIS!


BUT THE MAGNETIC FIELD AND SHIELDING ON KIT'S PROGRAM SHOULD HAVE TURNED THE DOMS INTO A TEAM OF RANDOM...!


NO EXCUSES!
IF YOU DON'T PRODUCE SOMETHING FOOL-PROOF BY NEXT WEEK I'LL PUT YOU IN THE RING WITH THAT FERROUS-FISTED FIGHTING MACHINE!
WHAT WILL THE STRANGER COME UP WITH?! ALL WILL BE ON-SCREEN NEXT PRINTOUT!


VALHALLA


apple
Marshall

TENANTS OF THE LATTICE WORK?

AS YOU KEY IN and tune in to Talk to Me, the single given away with this printout, you might be tempted to ask who or what is Mainframe anyway?

Mainframe is Murray Munro and John Molloy, two young musicians who got together a year ago to push back the frontiers of rock music using the latest new technology of synthesisers, computers and video systems. The result has been two singles and an album, *Tenants of the Lattice Work,* together with a 40-minute video of the album's science-fiction story line. The album has been also adapted for live shows with computer graphics and video providing a stunning backdrop while Murray and John perform on guitars and keyboards.

An exciting LP to listen to, *Tenants of the Lattice Work* has an added bonus of The Quest, a complicated puzzle for those who delight in such things. The successful puzzler will win an 18ct solid gold hallmarked letter 'M', worth about £2,500. There is an important clue included in the *Load Runner* free single, just to whet your appetite.

The concept of The Quest grew from the obsession of Murray and John with computer adventure games. Nowadays, however, they are preoccupied with the band and the various computer projects under way. The most important of these is a 'betweening' animation program for computer graphics.

Further information about Mainframe can be obtained from MC² Music & Records, 24 Missden Drive, Hemel Hempstead, Herts. If you want to listen to the album there is a reduced rate available for Decoders, on page 10.

Arcade IQ?

***FATHERS AND MOTHERS** worried that their children spend too muc time playing video games might be interested in the latest research fro the States. There sociologists have found that youngsters who spend good deal of time in games arcades tend to be above average at school, a well as more sociable than their non-computer-struck friends.*

Those who prefer to play their games at home often involve the fami in what is happening, spending time playing the games which used to b spent watching television rather than reducing homework time. Robe Olton, Atari manager of behavioural research, also claims that compute games have been used in hospitals to help children with serious burn exercise their painful arms—with great success.

Micro music

MAKING CINEMA FILMS is about to become easier. At the California studios of Lucasfilm, where all the Star Wars *films were put together, a digital sound processing studio is being built which is reported to be really space-age.*

The computer in the studio is being designed to bring more flexibility into producing sound-tracks, which at the moment is a very complicated process — The Empire Strikes Back *used 140 reels of tape on the sound-track.*

The new studio will be able to produce a variety of sounds which will be produced at the touch of a button and it is possible the computer will be able to 'listen' and learn from things played to it, a tremendous achievement, since one second of sound needs 50,000 numbers to represent it inside a computer.

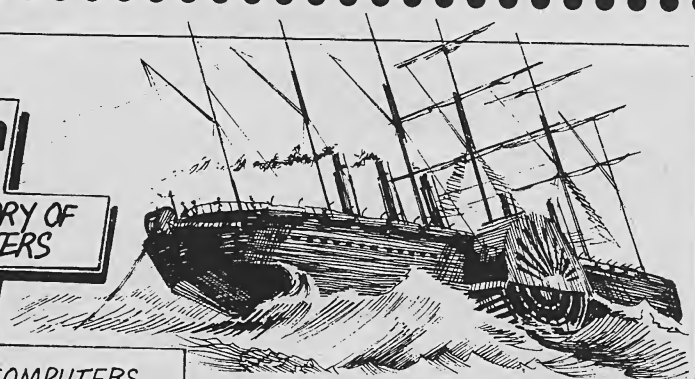
The games soldiers play

DID YOU KNOW that adults play war games, too? Defence system giant Marconi has built an electronic warfare simulator, the Electronic Warfare Evaluation Facility, which is being used to train soldiers to cope with electronic warfare.

Electronic warfare has nothing to do with guns or tanks; it uses technology to disrupt enemy military communications—for instance by dropping metallised fibres to interfere with enemy radar. As each potential threat is identified, the EWEF computer chooses the most suitable jamming techniques from its pre-programmed library and the simulator has to take into account data such as terrain features, weather conditions, enemy countermeasures and the effects of flight manoeuvres.

The Computer Story

A HISTORY OF COMPUTERS PART NINE



THE POTENTIAL OF COMPUTERS COULD NEVER HAVE BEEN EXPLOITED WITHOUT AN EFFECTIVE COMMUNICATIONS NETWORK.

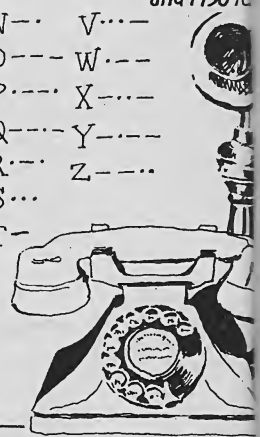
THE WAY AHEAD

TELEGRAPH SYSTEMS DEVELOPED DURING THE MID-19TH CENTURY AND WERE USED TO SEND CODED MESSAGES BY WIRE - USUALLY IN THE FORM OF SHORT AND LONG IMPULSES (DOTS & DASHES) FOR EACH LETTER OF THE ALPHABET. "MORSE CODE" - NAMED AFTER ITS INVENTOR - BECAME A UNIVERSAL SYSTEM, AND COULD ALSO BE SENT BY FLASHING LIGHT OR, BY THE 1900s, BY RADIO TRANSMITTER. THE SIGNALS HAD TO BE DECODED AND WRITTEN BY HAND.

WHEN ALEXANDER GRAHAM BELL INVENTED THE TELEPHONE IN 1876 IT ALSO BECAME POSSIBLE TO SEND THE SOUND OF THE HUMAN VOICE OVER WIRES BY ELECTRICITY. ALTHOUGH BELL'S TECHNIQUE WAS NOT THE ONLY POSSIBLE ONE, HE WAS ONE OF THE FEW TO R... NISE THAT SUCH A SERVICE WOULD COMMERCIALLY USEFUL. HE DID THE WORK TO SET UP A PROPER TELEPHO... NETWORK, AND SOON BOTH TELEGRA... AND TELEPHONE NETWORKS SPAN... THE WORLD.

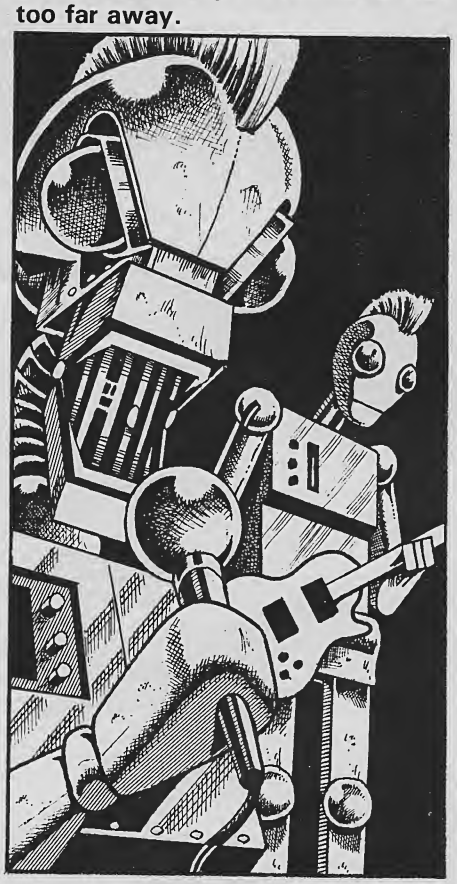
Left: Brunel's steamship "Great Easte... the first transatlantic cable in 1867. E...

A·—	M—	U··—	Morse cod...
B—···	N—·	V···—	and 1930 te...
C—·—	O— — —	W·— —	
D—··	P·— — ·	X—··—	
E·	Q— — ·—	Y—·— —	
F··—·	R·—·	Z— —··	
G— —·	S···		
H····	T—		
I··			
J·— — —			
K—·—			
L·—··			



Heavy Metal men

IN THE FIELD of computerised music Professor Ichiro Kato of Waseda University in Japan claims to have invented the world's first musically-talented robot which can play an electronic organ as competently as any human. So perhaps the day when we see the world's first pop group consisting of robots is not too far away.



Buzzwords are the jargon of the computer world and can be very confusing. Below, *Load Runner* continues its glossary of computing terms. Get buzzing.

Graphics. The display which the computer makes on a screen or a printer. It could be generated during an arcade game or be a graphic representation of information, i.e., a map, which has been entered into the computer.

Handshake. Communication between two parts of a computer system. One part of the computer indicates to another part a vital piece of information to keep it going.

Hard copy. The printout which is from a printer rather than from a television screen. It will be in the form of ink and paper.

Hardware. Anything which is electronic or has been made of electronic components. It is the equipment you can see, distinct from the software which is invisible to the user.

Hash. A mark which looks like a noughts and crosses symbol. It is American in origin and means number; e.g., # 1 means number 1.

Header. A piece of program code generated by the computer to go on to tape or disc before a program is stored. The information in the header usually includes the name of the program, the length of the program, and whether it is in a high-level language or in machine code.

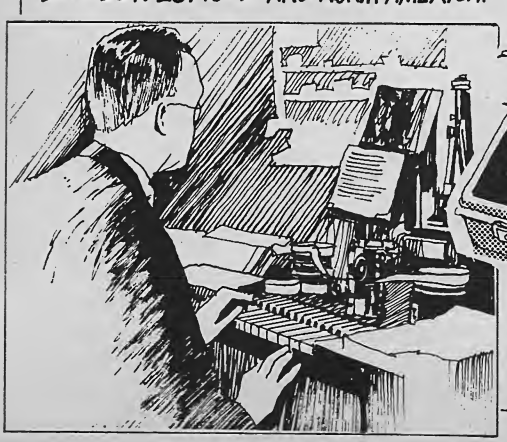
Heuristic. A method of solving a problem using a computer which relies on trial and error. It is a method where the computer learns which moves are correct and which are not by making mistakes. For instance, a noughts and crosses program might use a heuristic. It would have to play several games before it started to win and in losing it would determine which moves not to make again.

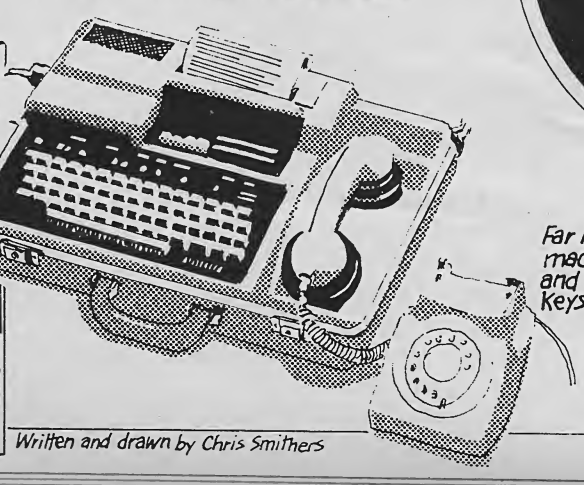
Hexadecimal. A number system which is different from the method of counting we use normally. In our number system, called denary, we use the digits 0 to 9. When we go beyond nine we use 0 again and put a one to the right of it. For that reason the number 10 follows nine. In the hexadecimal system we use the digits 0 to 9 but do not stop there. After 9 you get A, B, C, D, E and F. Instead of holding a digit which is 0 to 9, one number place can hold a digit which can be from 0 to F. That means you can store a number from 1 to 15 decimal in one digit.

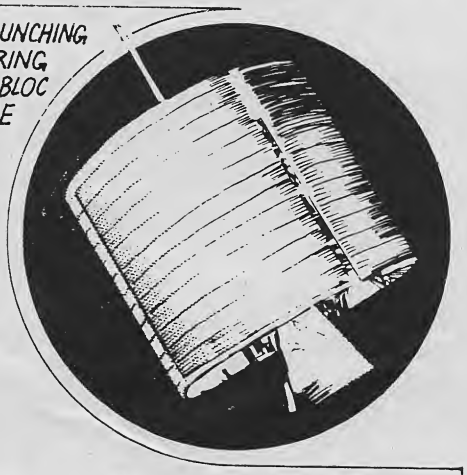
High-level language. A language which a programmer can understand easily but which the computer needs to translate into its language, machine code, before it can execute it. Basic — Beginners' All-purpose Symbolic Instruction Code — is a high-level language.

THE TELEX SYSTEM BEGAN IN THE 1930s. OPERATORS PUNCHED THE MESSAGE IN PAPER TAPE, WHICH WAS THEN RUN AT HIGH SPEED THROUGH A 'TRANSMITTER' AND DOWN THE TELEGRAPH LINE TO A PRINTER AT THE OTHER END. LINKS VIA SATELLITE BEGAN WITH THE LAUNCH IN 1965 OF "EARLY-BIRD"— THE FIRST INTERNATIONAL TELECOMMUNICATIONS SATELLITE, PROVIDING LINKS BETWEEN EUROPE AND NORTH AMERICA.

AT THE SAME TIME THE USSR BEGAN LAUNCHING ITS "MOLNIYA" SERIES OF SATELLITES TO BRING SPACE COMMUNICATIONS TO COMMUNIST BLOC COUNTRIES. COMPLETE GLOBAL COVERAGE IS NOW PROVIDED BY THE "INTELSAT" SERIES, ADMINISTERED AND PAID FOR BY OVER 105 MEMBER COUNTRIES. "INTELSAT 5" CAN CARRY 12,000 INDIVIDUAL TELEPHONE CONVERSATIONS AND TWO TELEVISION CHANNELS.







Written and drawn by Chris Smithers

Above: "Early-Bird" satellite.

Far left: The Hughes telegraph machine preceded telex operations, and its keyboard, with black and white keys, resembled a small piano (!)

Left: This portable communications device transmits and receives the printed word and operates four times faster than telex.

Virgin Games

GSH Guild of Software Houses

THE AMAZING ADVENTURES OF THE LAUGHING SHARK

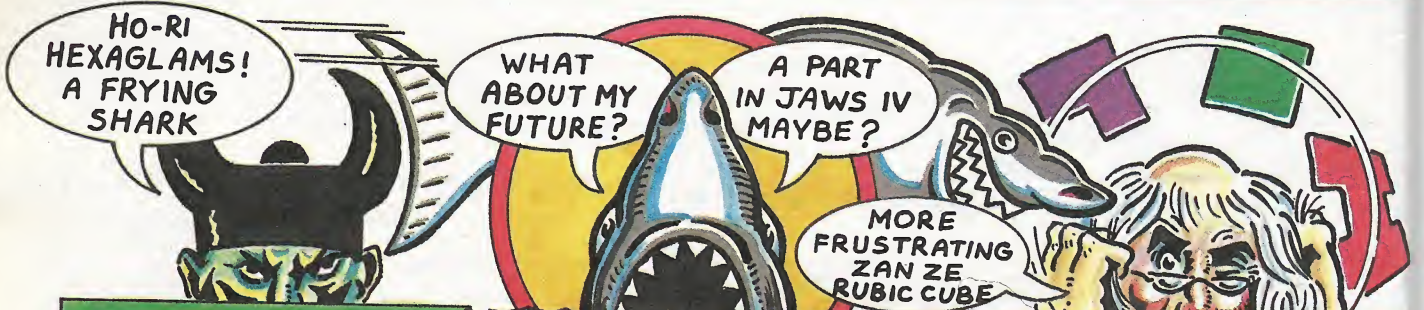
PART ONE

THE LAUGHING SHARK TORPEDOED TO THE SURFACE ONLY TO FIND HE WASN'T IN THE SUNNY PACIFIC – BUT IN THE DARK MURKY MOAT OF THE.....

CASTLE ADVENTURE WITH A THOUSAND DASTARDLY DEATHS – ACCOMPANIED BY THE MAD ORGANIST – PULLING OUT ALL THE STOPS.....

ESCAPING THE DEADLY SOUND OF MUSIC, THE LAUGHING SHARK NARROWLY AVOIDED A CRUISE LINER — IN A MOAT?!!

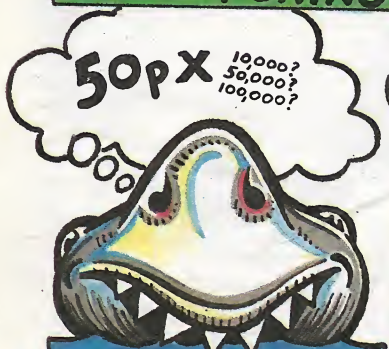
PASSING A PORTHOLE HE ESPIED NASTY DR. SINISTER PLANTING A BOMB. STOP HIM SOMEONE – OR THIS COULD TURN INTO A..... **DEATH CRUISE!!**



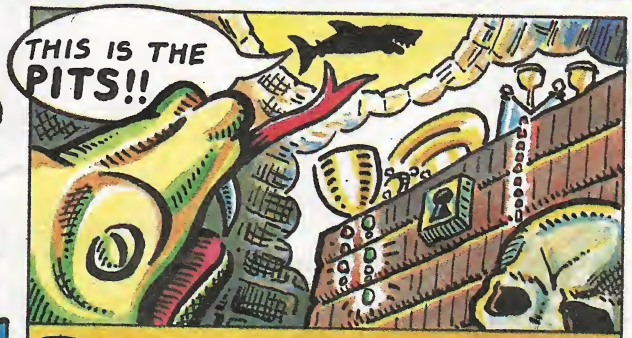
NOT WISHING TO SUFFER THE SAME FATE AS HIS COUSIN JAWS, OUR HERO DECIDED TO CONSULT THE ORACLE OF **I CHING....**

THE 4,000 YEAR OLD CHINESE ART OF THE HEXAGRAM – WITH ITS KEY TO FUTURE AND THE MEANING OF LIFE.

OVERFLOWING WITH NEWLY FOUND SELF-CONFIDENCE, LAUGHING BOY FELT READY TO HELP PROF. BATTY SOLVE THE PROBLEM OF **LOJIX** AND FIT THE SHAPES —

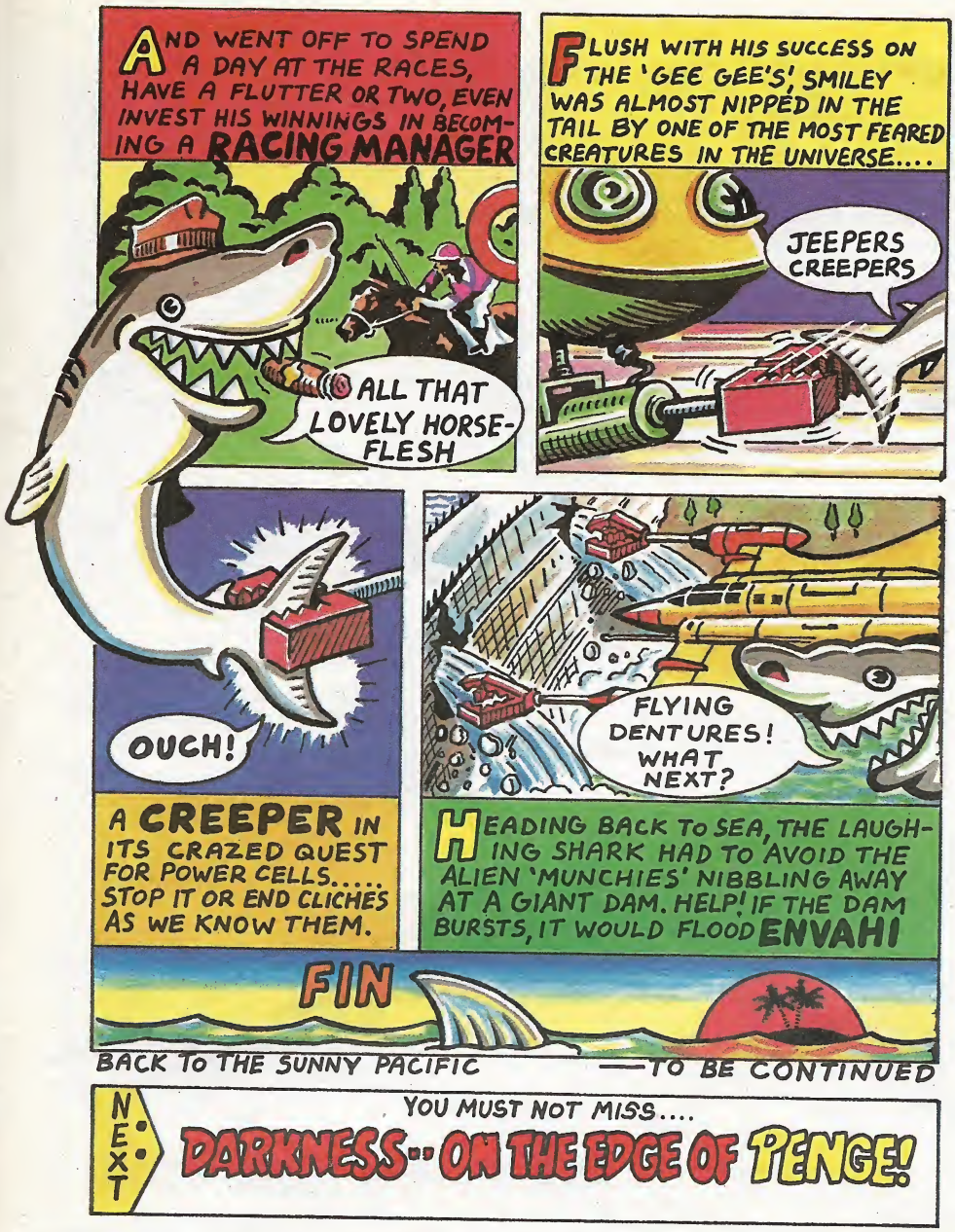


– INTO THE GRID. IF YOU MANAGE TO SOLVE IT, YOU COULD WIN THE LOJIX POT OF SILVER. 50p X EACH COPY SOLD



DIZZY FROM HAVING TO USE HIS LITTLE FISHY BRAIN OUR INTREPID 'CHUCKLES' GOT LOST AND FOUND HIMSELF IN THE DANK DEPTHS OF **KILLER CAVERNS!**

WITH ITS HORDES OF TREASURE AND DEADLY GUARDIANS... TOO MUCH, EVEN FOR A SUPER FISH, SO HE HOPPED ON A BUS.....



September RELEASES

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VGC 1006
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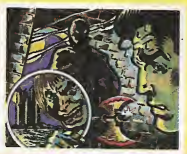

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by Conrad Jacobson
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ENVAHI
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VGC 3002
The game of the film of the book of the game.
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CREEPERS
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THE INVASION OF THE ARCADIANS

SCRIPT: LES COOKMAN
ART: JOHN STOKES
LETTERS: STEVE POTTER

FOLLOWING A **DAZER**, AGGIE AND BEN FIND THEMSELVES IN AN ENORMOUS ARCADE PACKED WITH THE EVIL **MIND WARP** MACHINES.

ASTONISHED, THEY STARE AS THE ROBOT-LIKE **DAZERS** MOVE FROM ONE MACHINE TO ANOTHER.

BEN! TAKE THAT LOOK OFF YOUR FACE! THEY'LL SPOT US!

WE'VE GOTTA LOOK LIKE THESE DAZERS—C'MON!

WE'LL HAVE TO PLAY THESE MACHINES AGAIN TO SUSS WHAT'S GOING ON.

I HOPE YOU KNOW WHAT YOU'RE DOING!

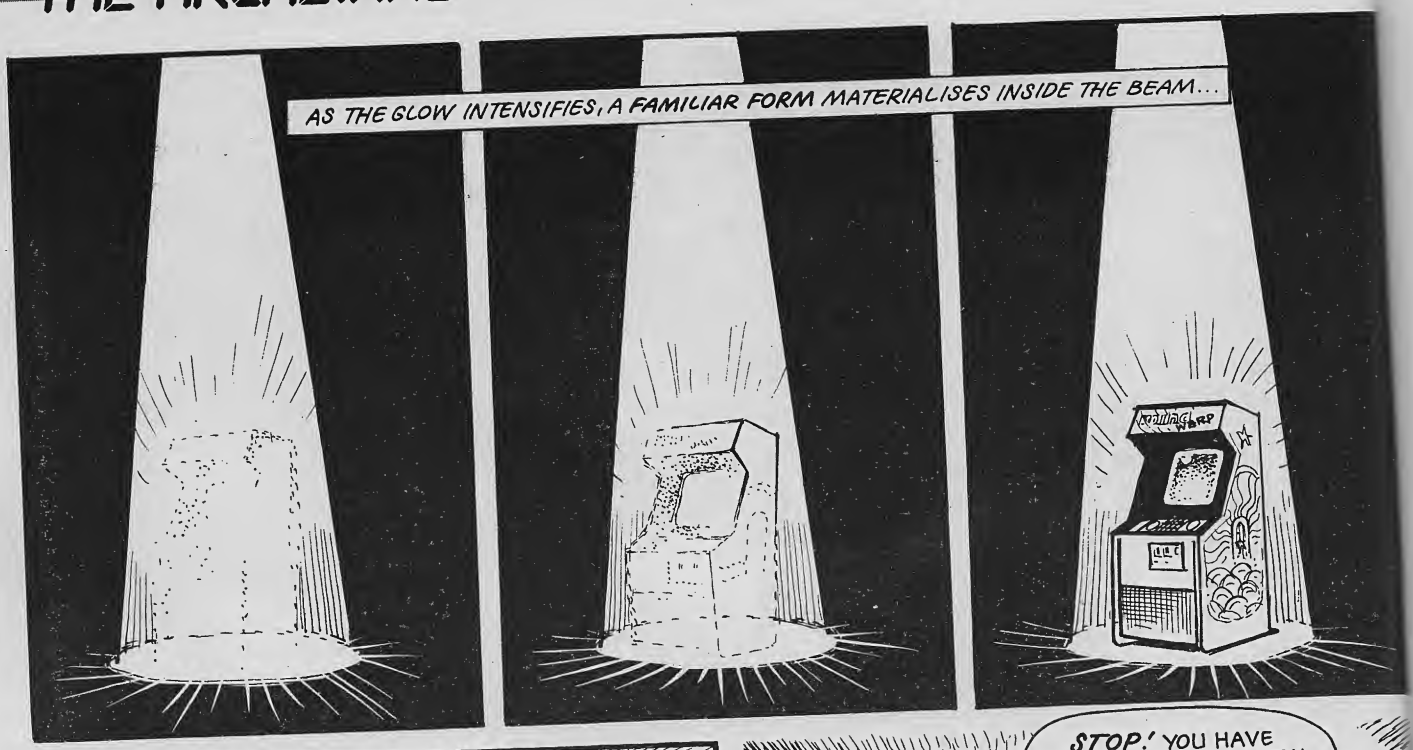
OH, HELP! I NEVER THOUGHT I'D HAVE TO PLAY ONE OF THESE AGAIN! WELL, *HERE GOES!*

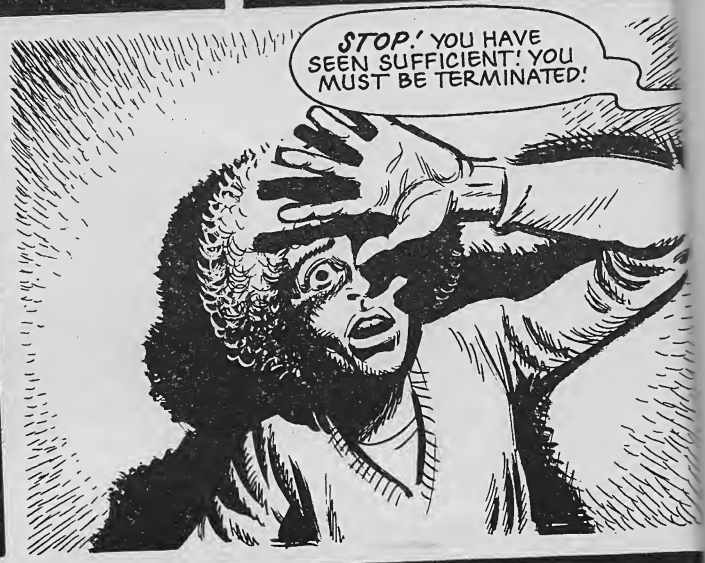
MEANWHILE, AT A STRANGE, ISOLATED STRUCTURE SOMEWHERE IN THE COUNTRY...

JO IS **WATCHING AND WAITING...**

AT LAST, THE DAZERS LEAVE...
I'VE 'AD ENOUGH OF THIS. I'M GONNA TRY AND FIND A WAY OUT. IT LOOKS LIKE THEY'VE ALL GONE NOW.
JO VENTURES OUT INTO THE MAZE OF AISLES AND CORRIDORS.
HOURS LATER...
AH, WHAT'S THIS? I THOUGHT I'D NEVER GET CLEAR OF THEM BLOOMIN' BOXES!
JO IS AT THE VERY HEART OF THE MYSTERIOUS COMPLEX.
WHERE'S THAT LIGHT COMING FROM? IT SEEMS TO BE GETTING BRIGHTER!
WHAT'S GOIN' ON? OH, MY...
I DON'T BELIEVE IT!

THE ARCADIANS





CONTINUED NEXT PRINT OUT.

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Commodore 64
SUPER GRIDDER

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CITY

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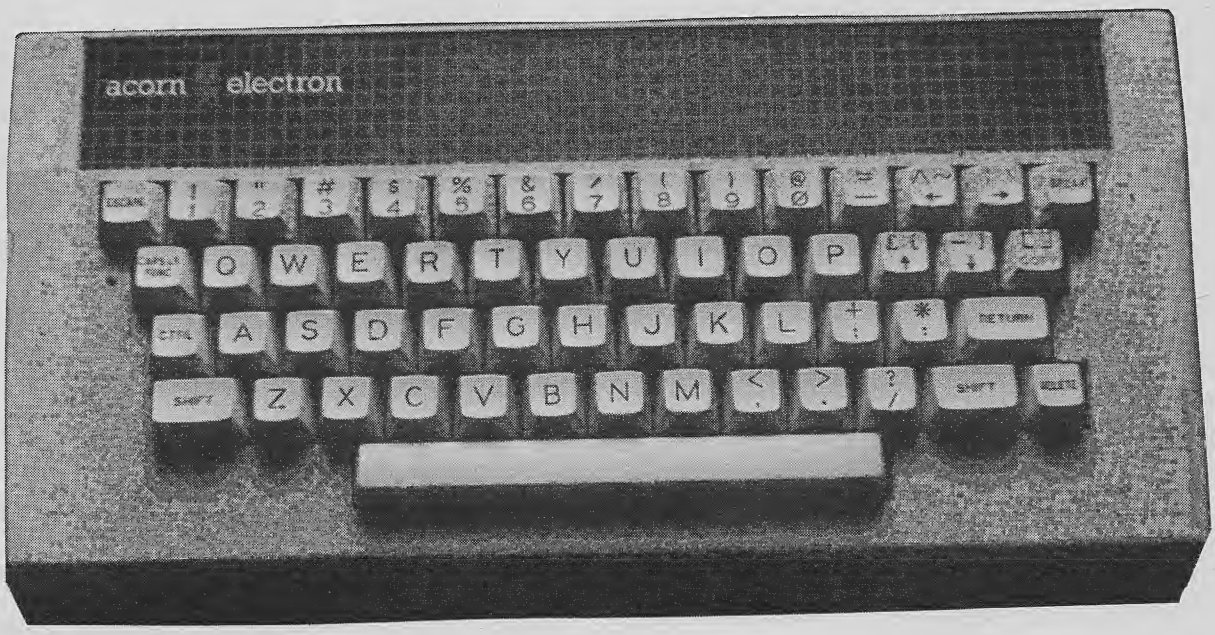
Electron



Acorn Computers Ltd,
Fulbourn Road,
Cherry Hinton,
Cambridge,
CB1 4JN

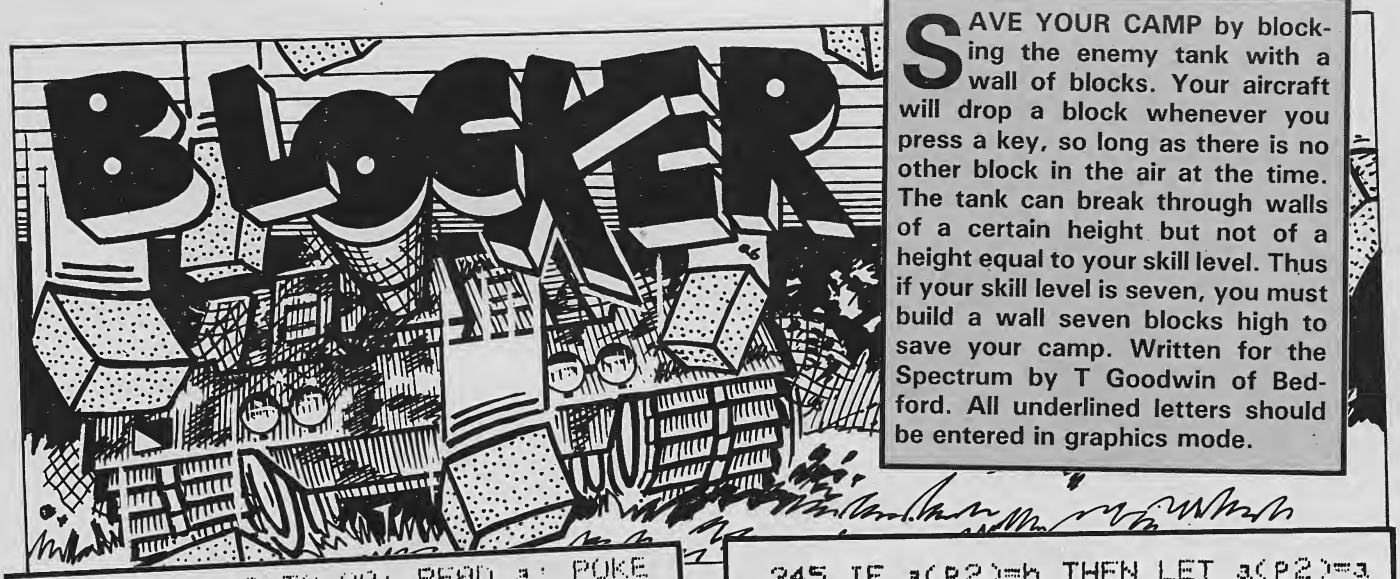
Specifications		
Price		£199
Numbers sold	Orders taken	—
How sold		Assembled
Processor		6502
Standard RAM		32K
Expansion RAM		—
Basic + operating system		32K
Display	Mode 0	80 characters × 32 lines
Tape recorder		Any
Backing storage		—

Software
Acornsoft, c/o Vector Marketing, Denington Industrial Estate, Wellingborough, Northamptonshire NN8 2RL.

Comments
The Electron may be half the price of the BBC Microcomputer model B but it uses the same language and in most cases it can use the same software. The only thing it lacks is a teletext graphics mode seven which the model B has. That will no doubt be added by a hardware company in the near future.

Software available for the machine includes two languages, Forth and Lisp, as well as games such as Chess and Meteors. The graphics potential of the Electron can be exploited by two programs, one called Creative Graphics and the other Graphs and Charts. Education and business are also catered for with Personal Money Management and Tree of Knowledge. All those programs are available from Acornsoft.

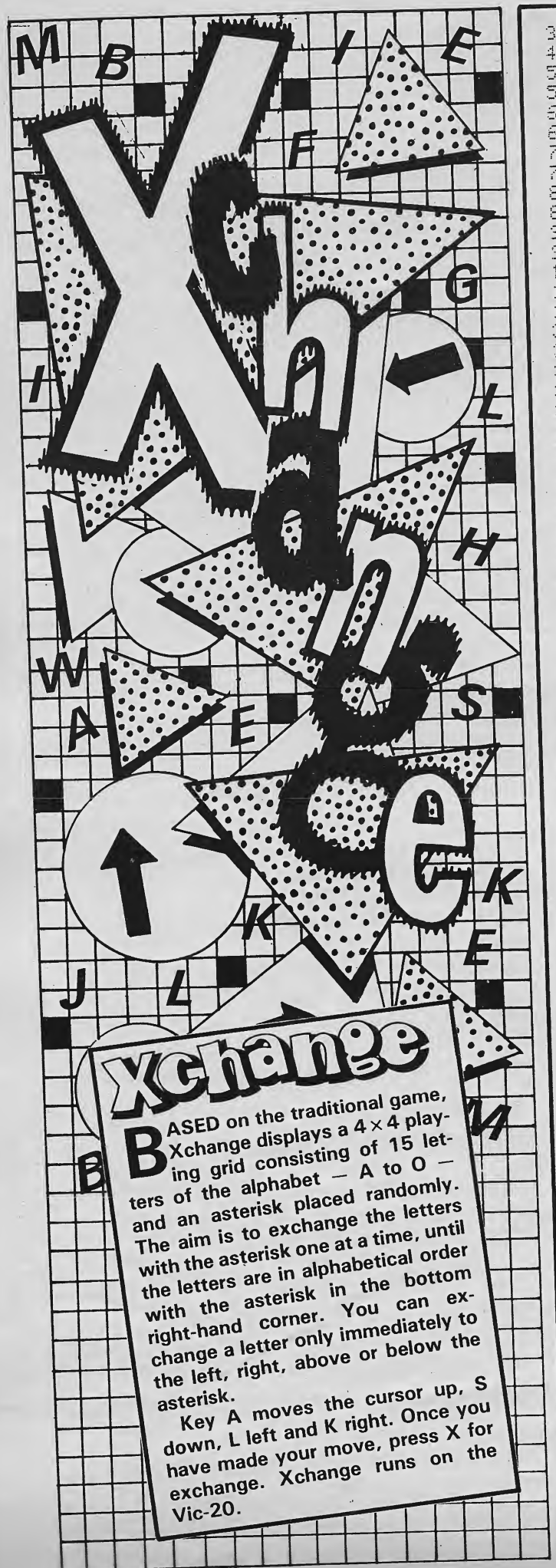
On the hardware front the machine should soon be supported by light pens, graphics tablets and a device which will control such aspects of home life as heating and lighting. Expansion units will also include printer interfaces, disc drive and a ROM slot into which a ROM program called View can be put to give the Electron word processing capabilities.



SAVE YOUR CAMP by blocking the enemy tank with a wall of blocks. Your aircraft will drop a block whenever you press a key, so long as there is no other block in the air at the time. The tank can break through walls of a certain height but not of a height equal to your skill level. Thus if your skill level is seven, you must build a wall seven blocks high to save your camp. Written for the Spectrum by T Goodwin of Bedford. All underlined letters should be entered in graphics mode.

```
  10 FOR i=0 TO 39: READ a: POKE
USR "a"+i,a: NEXT i
  20 DATA 0,0,0,28,63,255,255,12
7
  30 DATA 0,14,28,56,254,255,248
,248
  40 DATA 0,0,1,3,7,15,15,7
  50 DATA 0,0,128,255,224,240,24
0,224
  60 DATA 0,126,126,126,126,126,
126,0
  70 OVER 0: PAPER 5: INK 0: CLS

  80 PRINT TAB 12;"Blocker"; OVE
R 1;AT 0,12;"_______"
  90 PRINT " Protect your camP (
shown at the right hand side as
■) from an enemy tank by using
 any key to drop blocks in fron
t of it."
 100 PRINT '" The tank can climb
 a certain number of blocks,b
ut not as many as the skill
level you choose."
 110 PRINT '" The rating is base
d on where you block the tank
,the number of blocks you use
to block it, and the skill leve
l you choose."
 200 INPUT "Skill level ?(2 Leas
y TO 15)";s: IF s<2 OR s>15 THE
N GO TO 200
 210 BORDER 4: PAPER 5: INK 0: C
LS
 229 PRINT AT 21,31;"■"
 250 BEEP .1,20
 260 LET p=29: LET t=0: LET bul=
0: DIM a(31): LET h=21: LET p2=p
 300 PRINT AT 21,t-2;" CD";AT 0,
p;"AB "
 310 LET p=p-1
 320 IF p=0 THEN LET p=29: LET t
=t+1: PRINT AT 0,1;"  "
 330 IF t=31 THEN GO TO 1000
 340 IF IN 254<>255 AND bul=0 TH
EN LET bul=1: LET p2=p
 345 IF a(p2)=h THEN LET a(p2)=a
(p2)+1: LET bul=0: LET h=21
 350 IF bul=1 THEN LET h=h-1: PR
INT AT 21-h,p2; PAPER 0; INK 2;"
E";AT 21-h-1,p2; PAPER 5;" "
 360 IF a(t)>=s THEN GO TO 2000
 370 LET a(t)=0
 500 GO TO 300
1000 RESTORE 1030
1005 FOR i=1 TO 10
1010 READ a,b: BEEP a,b
1020 NEXT i
1030 DATA .75,-1,.5,0,.75,0,.5,0
,.75,0,.75,3,.75,2,.75,0,.5,-1,.
75,0
1040 PRINT AT 0,12;"Bad luck!"'"
   Your   camP is destroyed"
1050 GO TO 2060
2000 RESTORE 2100
2005 FOR i=1 TO 7
2010 READ a,b: BEEP a/1.5,b
2020 NEXT i
2050 PRINT AT 0,12;"Well done!"'
"    You have saved your camP"''
TAB 10;"Rating:";a(t)*s*(32-t)
2055 IF s>5 THEN GO TO 2200
2060 PRINT ''TAB 10;"Another go
?"
2065 PAUSE 0
2070 IF INKEY$="y" THEN GO TO 20
0
2080 IF INKEY$="n" THEN STOP
2090 GO TO 2065
2100 DATA .5,0,.25,0,.25,0,.5,4,
.25,7,.25,7,1,12
2200 FOR i=1 TO 20
2205 LET r=INT (RND*5)
2210 BEEP .25*(INT (RND*3+1)),(0
 AND r=0)+(12 AND r=1)+(7 AND r=
2)+(4 AND r=3)+(-5 AND r=4)
2220 NEXT i
2230 BEEP .75,12
2250 PRINT ''"     You are awarde
d the V.C.": GO TO 2060
```



Xchange

BASED on the traditional game, Xchange displays a 4×4 playing grid consisting of 15 letters of the alphabet — A to O — and an asterisk placed randomly. The aim is to exchange the letters with the asterisk one at a time, until the letters are in alphabetical order with the asterisk in the bottom right-hand corner. You can exchange a letter only immediately to the left, right, above or below the asterisk.

Key A moves the cursor up, S down, L left and K right. Once you have made your move, press X for exchange. Xchange runs on the Vic-20.

```
30 PRINT"□"
40 DIMX$(17):DIMY$(17):DIMQ$(17)
50 DATA 1,2,3,4,5,6,7,8,9
55 DATA 10,11,12,13,14,15,42
60 FOR Z=1TO16
65 READX$(Z)
70 NEXT Z
75 FOR Z=1TO16
80 R=INT(17*RND(1))
85 IF R<1 THEN 80
90 Y$(Z)=X$(Z)
95 X$=X$(Z)
100 X$(Z)=X$(R)
105 X$(R)=X$
110 NEXT Z
300 Q=7863:R=38583
310 FOR M=1TO9
320 FOR N=1TO9
330 READ F
340 IF F=255 THEN GOSUB 800
350 IF F=42 THEN L=R
360 POKE R,0
370 POKE Q,F
380 Q=Q+1:R=R+1
390 NEXT N
391 Q=Q+13:R=R+13
392 NEXT M
393 POKE L,2
400 P=L
410 GETA$:IF A$="" THEN 410
415 IF W=0 AND  RR=0 THEN GOSUB 575
420 IFA$="A"THEN 500
430 IFA$="S"THEN 520
440 IFA$="L"THEN 560
450 IFA$="K"THEN 540
460 IFA$="X"THEN 580
470 POKEL,0:POKEP,2
480 GOTO410
500 P=P+UP:IFW<>0 THEN470
501 LT=0:RT=0:UP=0:DW=44:W=W+1
510 GOTO 470
520 P=L+DW:IFW<>0 THEN470
521 LT=0:DW=0:RT=0:UP=-44:W=W-1
530 GOTO 470
540 P=L+LT:IF RR<>0THEN 470
541 UP=0:DW=0:LT=0:RT=2:RR=RR+1
550 GOTO 470
560 P=L+RT: IFRR<>0 THEN470
561 RT=0:UP=0:DW=0:RT=-2:RR=RR-1
570 GOTO 470
575 UP=-44:DW=44:RT=2:LT=-2
576 RETURN
580 M=PEEK(L-30720):V=PEEK(P-30720)
590 POKE(P-30720),M:POKE(L-30720),V
600 L=P:W=0:RR=0
700 FOR I=1TO16
701 NN=VAL(Q$(I))
702 MN=PEEK(NN)
703 Q$(I)=STR$(MN)
710 IFQ$(I)<>Y$(I) THEN 410
720 NEXT I
730 STOP
800 T=T+1
810 Q$(T)=STR$(Q)
820 F=VAL(X$(T))
830 RETURN
1000 DATA 112,64,114,64,114,64,114,64,110
1010 DATA 93,255,93,255,93,255,93,255,93
1020 DATA 107,64,91,64,91,64,91,64,115
1030 DATA 93,255,93,255,93,255,93,255,93
1040 DATA 107,64,91,64,91,64,91,64,115
1050 DATA 93,255,93,255,93,255,93,255,93
1060 DATA 107,94,91,64,91,64,91,64,115
1070 DATA 93,255,93,255,93,255,93,255,93
1080 DATA 109,64,113,64,113,64,113,64,125
READY.
```

Hangman

This version of the old paper-and-pencil game for the Oric is straightforward but nevertheless entertaining. The computer selects a mystery word and you have to guess the letters one at a time. Eight mistakes and you are dead.

New words can be inserted by typing-in new lines after line 1010 with DATA statements. Put commas between each word and for every word you add to the list increase the number after the * in line 20 and the number after TO in line 30. It is best if you can have a friend insert the mystery words, or you will know the answers before you start.

```
10   DIM SS$ (15)
20   A= INT (RND (1) * 13)
23   R= Ø: W= Ø: G=2
25   RESTORE
30   FOR X= Ø TO 12
40   READ W $
41   IF X=A THEN D$ = W$
42   NEXT X
50   CLS
60   C= LEN (D$)
70   D= C/2 : E = 19 - D * 2
80   FOR F=1 TO C
90   PLOT E, 2Ø, "_"
100  E=E + 2
110  NEXT F
120  PRINT: PRINT: PRINT: PRINT: PRINT: PRINT: PRINT:
129  PLOT 2,6, "INPUT YOUR GUESS": AA=Ø
130  GET GS$: IF GS$=" "THEN STOP
131  PLOT G, 22, GS$: R=R + 1
132  FOR I=Ø to R
133  IF GS$ - SS$(I) THEN GOSUB 2ØØØ
134  IF AA=1 THEN 137
135  NEXT I
137  SS$ (R-1) = GS$
138  G=G + 2: T = Ø
140  IF AA- 1 THEN 129
145  FOR Y= 1 TO C
150  E$= MID$ (D$, Y, 1)
160  IF E$= GS$ THEN 5ØØ
170  NEXT Y
175  IF T=Ø THEN GOSUB 2ØØØ
180  GO TO 129
200  PLOT 2,6, "YOU'RE DEAD!!"
202  PLOT 2,7, "THE WORD IS" : PLOT 14, 7, D$
204  WAIT 200
210  PLOT 2,7, "DO YOU WANT TO PLAY AGAIN Y/N"
230  INPUT O$
240  IF O$ = "Y" THEN RUN ELSE END
250  PLOT 2,6, "WELL DONE THAT'S IT"
260  GO TO 210
500  E= 19 - D*2: Z= E + 2* (Y - 1)
510  PLOT Z, 2Ø, G$: T=1
516  W=W + 1: IF W=C THEN 250
520  GO TO 170
1000 DATA CAT, DOG, LETTER, ANIMAL, BOTTOM
1010 DATA BESPOKE, PROGRAMS, COMPUTER, PRINT
1020 DATA BAT, MEMORY, TABLE
2000 PLOT 2,6,"
2001 READ V: READ B: READ L: READ M$
2002 IF V=255 OR B=255 THEN RETURN
2003 IF M$= "V" THEN 2040
2005 IF M$= "U" THEN 200
2007 AA=1
2010 FOR J= V TO V + L
2020 PLOT J,B,"*"
2030 NEXT J : GOTO 2000
2040 FOR K= B TO B - L STEP - 1
2050 PLOT V,K,"*"
2060 NEXT K: GOTO 2000
3000 DATA 29, 15, 3, H, 30, 15, 10, V
3010 DATA 30, 5, 6, H, 255, 255, Ø, S
3020 DATA 33, 7, 2, H, 33, 8, 2, H
3030 DATA 255, Ø, Ø, V, 34, 13, 4, V
3040 DATA 32, 10, 4, H, 33, 13, 2, H
3050 DATA 255, Ø, Ø, S, 32, 11, Ø, H
3060 DATA 255, Ø, Ø, S, 36, 11, Ø, H
3070 DATA 255, Ø, Ø, S, 33, 14, Ø, H
3080 DATA 255, Ø, Ø, S, 35, 14, Ø, H
3090 DATA 255, Ø, Ø, S, 34, 6, Ø, H
3100 DATA Ø, Ø, Ø, U
```

HI ! I'M BRAINY and I really rate computers. I'm in *Load Runner* every issue so write to me at 196-200 Balls Pond Road, London N1 4AQ and I'll do my best to answer any questions you have.

Remember, Brainy's the name and, by the way, I will pay £1 to anyone whose name is mentioned. Write away!

BRAINY'S BRAINBOX

Vic-20 expansion is complicated

I OWN an unexpanded Vic-20 and would like to know how much extra memory I should buy and from which company to buy it. Can you help?

Derek Wright, Orpington, Kent.

THE AMOUNT of memory you buy depends on how much you want and are prepared to pay for. Certainly the 5K with which you start is miserly. You can buy extra memory in packs of 3K, 8K and 16K, and up to 27K in all, making 32K. It is very complicated how Vic extra memory works, in fact. Most Vic-20 owners say that Commodore extra memory chips are very expensive, so look around. Some other companies sell these RAM chips for your computer; look in the popular computing magazines.

* * *

Extra chips for the BBC

COULD YOU tell me the cost of fitting an extra 6502 or Z-80 processor to the BBC micro and which would you recommend? Where could I have it done?

Marc Williams, Cleveland.

UNFORTUNATELY, unless you are very knowledgeable about the intricate workings of the Z-80 processor chip, you will not be able to use one in coordination with the 6502 chip already in the BBC micro, because they use different machine codes. You would be better to wait for the special Acorn second processor, which would be much safer and reliable than trial and error.

If you do not want to wait for the Acorn chip, you could buy another 6502a—the one already in the BBC—but you would also need other chips to help them communicate. I doubt if there is any shop which would do it for you and it would probably be expensive.

* * *

Nicely out of tune?

WHENEVER I sing at home, my mother says I am out of tune. She says that I should practise singing with a computer which has been programmed to sing songs in tune. We have an Apple. Are there any tapes which make it able to sing?

Katherine Vaughan, 7, Hereford

THERE ARE none of them yet. The computer can be made to say the words of the song, or to hum the tune, but not both at once. I suppose you could try to borrow another computer and have both operating together but I have a feeling your mother might think that was even worse. So it looks as if she will have to suffer until you learn to sing in tune.

* * *

Scramble for the Spectrum

COULD YOU tell me where I could find a 16K version of Scramble for the Spectrum?

Alan Strawbridge, Weymouth, Dorset.

MIKRO—GEN, 24 Agar Crescent, Bracknell, Berkshire sells one at £5.50. There are probably others but it is the only one listed in the *Microscene Guide to Spectrum Resources*—£2, 6 Battenhall Road, Birmingham 17—which I find useful when looking for certain programs for the Spectrum. You could also keep your eyes open for the same game under a different title in reviews and advertisements in popular magazines. Go to an exhibition and you will find other games, too, at reduced prices.

* * *

Model A or model B?

I AM thinking about buying a BBC computer. All my friends say the model B is best but the model A is less expensive. Could you tell me the main differences between the two models?

Andrew Whiteside, Clitheroe, Lancs.

IT REALLY DEPENDS whether you are thinking of price or computer. The model A is being phased-out and if you buy it you have to buy extra memory to run most commercial software. The model A cannot use a printer and cannot control other equipment, e.g. central heating. On the other hand, the model B is £100 more expensive than model A and you can buy a complete upgrading kit for £48; that means you have a computer as good as the model B for £50 less.

Unfortunately, you have to fit your kit yourself and have to know something about how computers work. You also endanger your guarantee by doing it, so if anything goes wrong after upgrading you may not be able to get your money back. Model A plus upgrade is a good investment, though, and the best thing is to do it in stages as your needs expand.

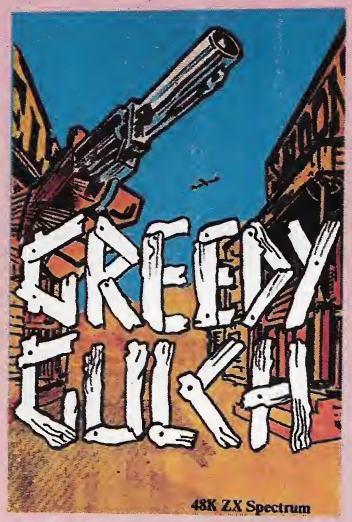
TRUMBULL'S WORLD

MARC HAS BEEN CAPTURED BY THE EVIL **SIMIAN** AND THE SINISTER **HUNTER**. JAN HAS BEEN LEFT TO DIE. IT SEEMS THAT THE QUEST THROUGH THE **ADVENTURE WORLD** CREATED BY THEIR FATHER ON HIS **COMPUTER** IS DOOMED.

AND NOT FAR AWAY...
THE BOY WILL TELL US NOTHING BECAUSE HE KNOWS NOTHING.
PERHAPS.
THE WORLD WILL TAKE HIM AS IT TOOK US... AS IT TAKES US ALL.
PHILOSOPHY, SIMIAN?
TRUTH, OLD FRIEND. TO SURVIVE AS WE HAVE DONE, YOU MUST TAKE THE WORLD BY THE THROAT, OR IT WILL SURELY KILL YOU. HE'LL LEARN.
I'M COLD. I GET SO COLD SOMETIMES. I WONDER WHAT'S HAPPENING OUT THERE?
IF SIMIAN ONLY KNEW...
EMES, THE LOWER LEVELS ARE ON FIRE. THE RABBLE CONTROLS HALF THE CITY.
WE MUST SAVE THE INNOCENTS. PREPARE THE SHUTTLE.
IN THE STREETS THE PEOPLE VENT THEIR ANGER.
TRUMBULL
BE RELEASE
WHILE IN THE GAME CROWDS GATHER FOR ANOTHER, HAPPIER, PURPOSE.
THE LAST FRAGMENT!
THIS IS THE VILLAG
THE GAMES ARE
ABOUT TO BEGIN.
YOU ARE THE LAST
COMPETITOR.
THERE IS A PIECE
OF THE CLASP IN
THE VICINITY.
GAME HELP IS AVAILABLE ON TWO OPTIONS. PLEASE CHOOSE FROM THE FOLLOWING...
yes SWIMMING
RUNNING
yes JAVELIN
DISCUS
HIGH JUMP
LONG JUMP
THAT'LL HAVE TO DO.

JAN LINES UP AGAINST THE OTHER COMPETITORS.
THEY SEEM TO HAVE ACCEPTED ME, ANYWAY. WHAT HAPPENS NOW?
JAN SOON FINDS OUT. SWIMMING...
...RUNNING...
...THROWING...
...AND...JUMPING...
...AND WINNING!
THE HUNTER'S KEEN SENSES DETECT JAN'S VICTORY.
GET THE CHILD! THE GIRL HAS WITS AND COURAGE. WE MUST MAKE HASTE.
THE GAME IS ALMOST OVER...
THE LAST SHARD OF THE CLASP! HOW DO I GET IT?
SIMPLY SWIM AND COLLECT.

SUDDENCY.
STOP! DELIVER THE CLASP TO ME OR I WILL KILL THE BOY!
OH... MARC!
HURRY, GIRL. MY PATIENCE WEARS THIN.
I'VE ONE CHANCE, IF ONLY THE GAME HELP IS STILL IN ACTION!
WE'LL NEVER GIVE UP!!
NOOO!!
VERY IMPRESSIVE. NOW GIVE ME THE CLASP OR HE DIES. VERY SLOWLY.
NEXT PRINTOUT: DEFEAT.



Wild West adventure

GREEDY GULCH is an adventure game for the 48K Spectrum which the manufacturers claim has been written specially for novice adventurers. There are no monsters, as it is a fight against natural elements in a western ghost town. You have to find a map which will indicate to you the location of an old mine where gold can still be found.

If you are lucky you will find all the objects you need for mining hidden in the town. If you are unlucky you will venture into the desert, cursed by the burning heat of the sun, and be lost forever. That means you will be kept continually on the edge of your seat, not wanting to enter the desert because you fear that you have not collected all the items.

The adventure is split between a text and graphics game. On the upper half of the screen is displayed a picture of the location in which you are standing. Below it is a textual description of the location and, sometimes, the objects which can be found there.

Greedy Gulch is an excellent adventure game which should give any novice an introduction to the schemes and plots hatched by the authors of such games. It costs £4.95 and can be obtained from Phipps Associates.

Fun, 7; addictive, 7; graphics, 8.

Go to the Devil!

MONSTERS, witches and warlocks inhabit Hell's Temple, for the 48K Oric 1. You, of course, have been selected to enter Satan's domain where you will risk your life and soul to gain riches which, you are told, are beyond your imagining.

There are 70 monsters to battle, although even if you play for a long time you have to do combat with fewer than 10 of them. If you are killed by one of the Devil's denizens you may be re-incarnated by the computer so that you can fight another day. If the computer is not feeling generous and you remain in a general state of death you will just have to start the game again.

The program is excellent, so it is a pity about the instructions, or lack of them. The booklet tells you how to move around the temple and how to detect monsters but it gives no good reason why it is worth venturing into such perilous dungeons. There is no mythos or storyline contained within the booklet.

Apart from criticism about the documentation, the game is very enjoyable and should be of interest to all players of Dungeons and Dragons, which has a similar type of play concept. Hell's Temple is available from Kenema Associates for £12.

Fun, 8; addictive, 8; graphics, 7.

Kopter caper

HELPING two secret agents to escape from enemy territory is no mean feat in Krazy Kopter. It is a fast moving shoot-'em-up game with three levels.

Piloting a helicopter, you must bomb enemy cars on three bridges to prevent them reaching the far bank. If they succeed an anti-aircraft missile blasts you out of the sky. A green army truck carrying the secret agents moves back and forth across the bridges and you should try to avoid that because if you touch it accidentally you will drop like a stone into the sea below.

Enemy ships below fire at you continually and are joined by anti-aircraft rockets and zigzagging UFOs as you progress through the different levels.

This game is for one player only and is extremely difficult but, once mastered, is entertaining, and accompanied by excellent title music. Marketed by the English Software Co for the Atari 400/800, Krazy Kopter is for those who like a challenge and is well worth £14.95.

Fun, 7; Addictive, 8; Graphics, 6.

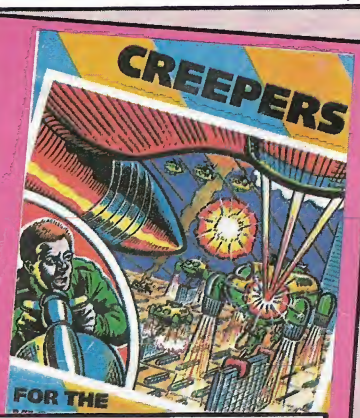
Sneaky creepers

CREEPERS, from Virgin Games, is a fast and nerve-racking game and could be very popular with Defender fans. It runs on a Vic-20 and the cassette has two versions of the game, for the model 3K and the expanded 8K. Both versions are good, though the 8K version is obviously better.

Piloting your fighter craft you attempt to prevent the swooping aliens stealing your energy blocks, for if they manage to take all the blocks from a particular zone they turn into mutants and zero in on you. As the game progresses the aliens descend in formation, making it almost impossible to co-ordinate your firing and, of course, the speed of the game is increasing continually.

A challenging game to play, Creepers has the added bonus of both joystick or keyboard controls. It costs £5.95.

Fun, 8; addictive, 6; graphics, 7.



WHOOSH!

THE WHOOSH of missiles and the explosion of fuel tanks can mean only one thing. The arcade game Scramble has arrived for the Commodore 64 in the shape of Super Skramble from Terminal Software.

As a Skramble pilot you have to move your spacecraft into the caverns, dodging missiles and destroying enemy installations which appear on the ground. To keep your craft fuelled you have to hit the fuel dumps, which are also on the ground, with your bombs. If you fail to collect sufficient fuel in that way your spaceship will crash.

The addition of a joystick option makes the game all the more like an arcade spectacular and should provide anyone who likes zapping games with hours of fun. Super Skramble can be obtained from Terminal Software and costs £9.95.

Fun, 7; addictive, 7; graphics, 8.

THE ADVENTURES OF ROM AND RAM

A PEACEFUL AFTERNOON AT **DUNZAPPIN**, AND THE KIDS ARE **RELUCTANTLY** DOING THEIR **HOMEWORK**.

I'D RATHER BE PLAYING WITH THE **COMPUTER**

I **HATE** QUESTIONS LIKE THIS

ZZZZ

QUESTION FIVE. IT TAKES THREE MEN FOUR HOURS TO DIG A HOLE 2M x 2M x 2M. HOW LONG WILL IT TAKE TWO MEN?

WHO CARES **ANYWAY**? I KNOW, LET'S ASK THE COMPUTER

LITTLE DO THE KIDS KNOW THAT THEIR COMPUTER IS REALLY A SPY SHIP FROM THE DISTANT **PLANET ZILLYKON**. INSIDE...

HMM, THAT'S A **TOUGH** ONE. ARITHMETIC WAS NEVER MY STRONG POINT

WHAT IS, ROM, WHAT IS?

THERE. I'VE FED THE PROBLEM IN

NOW WE JUST WAIT FOR THE ANSWER. **WHY** DIDN'T WE THINK OF THIS BEFORE?

PUNCH! PUNCH!

YOU MUST BE **JOKING**, RAM

THERE'S ONLY **ONE** WAY TO FIND OUT THE ANSWER FOR CERTAIN. FOLLOW ME

IN THE FRONT GARDEN

GNOME, SWEET, GNOME, HOW'S YOUR GOOD ELF?

STOP CLOWNING AROUND AND DO YOUR SHARE OF THE DIGGING. THIS WAS **YOUR** IDEA!

WHEN I CAME TO **EARTH** I DIDN'T THINK I'D END UP **SHOVELLING IT**!

?

STOP COMPLAINING AND **DIG**!

MEANWHILE, IN THE HOUSE...

IT **CAN'T** TAKE THIS LONG TO WORK OUT ONE PROBLEM

MAYBE WE HAVE A **BUG**

?!?!?!?

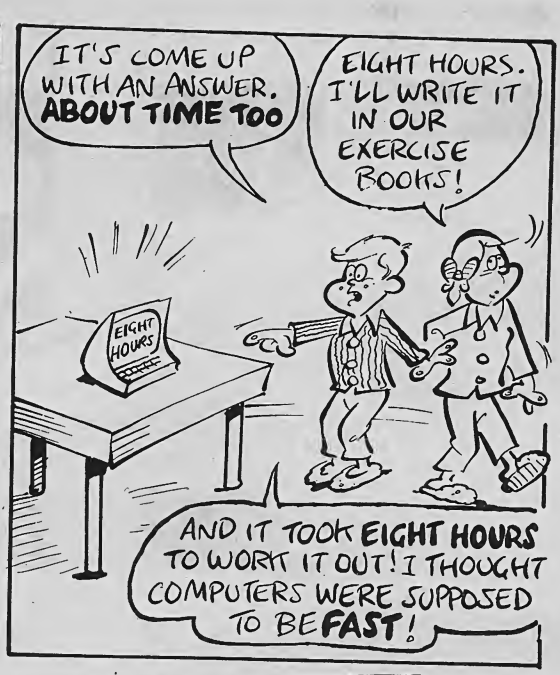
THAT EVENING...

HOW LONG HAVE WE BEEN DIGGING?

7½ HOURS. WE'LL SOON HAVE THE ANSWER. PASS ME THAT TAPE MEASURE!

HALF AN HOUR LATER
FINISHED! EIGHT HOURS DEAD!
AND I'M DEAD BEAT! I DON'T DIG EXERCISE

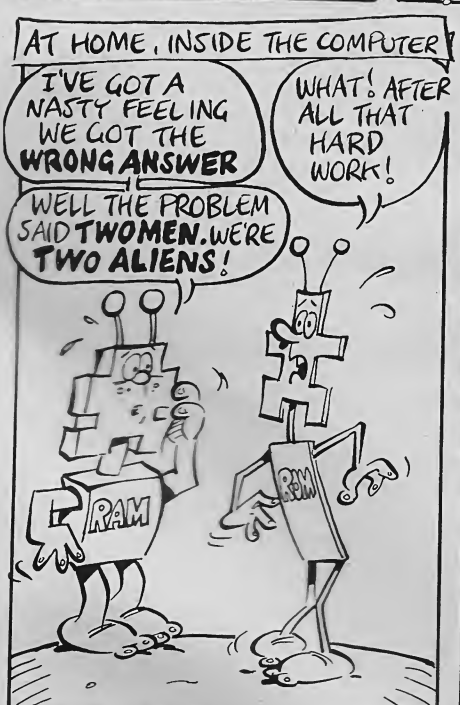
BACK IN THE COMPUTER...
WE'LL DISPLAY OUR ANSWER ON THE SCREEN FOR THE HUMANOIDS
ZZZZZ
RAM

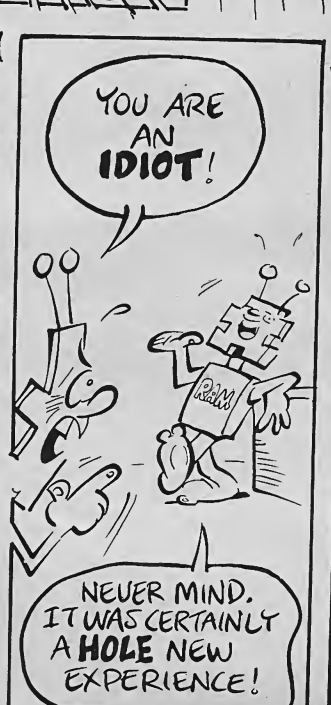

IT'S COME UP WITH AN ANSWER. ABOUT TIME TOO
EIGHT HOURS. I'LL WRITE IT IN OUR EXERCISE BOOKS!
EIGHT HOURS
AND IT TOOK EIGHT HOURS TO WORK IT OUT! I THOUGHT COMPUTERS WERE SUPPOSED TO BE FAST!

MEANWHILE IN THE GARDEN, SOMETHING UNPLEASANT IS ABOUT TO OCCUR...

CRASH!
WHY DID YOU DIG THIS STUPID HOLE WHEN YOU SHOULD HAVE BEEN DOING YOUR HOMEWORK?!
IT WASN'T US DAD, HONEST!
OH, I SUPPOSE IT WAS LITTLE GREEN MEN!

NEXT DAY AT SCHOOL
YOUR HOMEWORK IS A DISGRACE! THE ANSWER TO QUESTION FIVE IS SIX HOURS!
BUT WE ASKED OUR COMPUTER
COMPUTERS ARE NEVER WRONG!


AT HOME, INSIDE THE COMPUTER
I'VE GOT A NASTY FEELING WE GOT THE WRONG ANSWER
WHAT! AFTER ALL THAT HARD WORK!
WELL THE PROBLEM SAID TWO MEN. WE'RE TWO ALIENS!
RAM
RAM


YOU ARE AN IDIOT!
RAM
NEVER MIND. IT WAS CERTAINLY A HOLE NEW EXPERIENCE!

THAT EVENING...
IF IT TAKES A SPACESHIP 3 YEARS TO FLY FROM THE THE PLANET VENUS TO...
AAAARRRGGHH!
SWOOW!
ANDY ROBB

PAC-MAN

NOW FOR SOMETHING completely different. When some of the more seasoned arcade players were becoming a little tired of defending the galaxy from the evil invaders from outer space, Pac-Man arrived. The lovable dot muncher first gobbled his way into the arcades towards the end of 1980.

The birth of a whole new concept in arcade game design, Pac-man required totally different strategies. More forward planning was needed rather than a quick trigger finger.

Pac-Man has to chomp his way round a maze filled with dots while being pursued by four brightly-coloured ghosts, each with its own personality and cute name. Blinky—red— is the fastest ghost and can overtake Pac-Man in his haste to escape. The other three, Inky, Pinky and Clyde, all travel at about the same speed as Pac-Man.

To help Pac-Man from being caught and to score bonus points there are flashing energy dots in each corner of the maze. When Pac-Man eats one of the dots the ghosts take fright by turning blue and beating a hasty retreat. If Pac-Man manages to catch them while in that state, the ghosts' eyes seek reincarnation in a box in the centre of the maze.

Other bonus points can be earned when fruits appear beneath the ghosts' home. They should be eaten to help boost your score, The fruits appear for only a few seconds, so you have to be quick off the mark. If things become a little too hectic there is a tunnel to go into at one side of the screen which brings Pac-Man out the other side. With each new screen of dots the ghosts become faster and the energy dots have a reduced effect.

A final warning—prolonged exposure to Pac-Man can result in a severe case of Pacmania, as seen in the U.S. with a flood of Pac-Man souvenirs, toys and records. Refreshment periods can be taken in Pac-Man restaurants between watching Pac-Man cartoons on television.

Software

PAC-MAN for the Atari home computer is widely regarded as the best home version available. There is also a version available for the VCS.

Gulpman is a fair Pac-Man type game but has poor graphics for the Spectrum.

Acornsoft produces Snapper for the BBC computer, another version with good graphics.

After the withdrawal of the excellent Bug-Byte version of Pac-Man, the next best Vic-20 version is Puckman by Morris Associates of Port Talbot. It has good graphics but uses the keyboard for control, which greatly reduces playability.

Ratings out of 10

Atari VCS	7
Atari Computer	9
Gulpman	7
Snapper	9
Puckman	6

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